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# MT5000/4000 Series HMI and PLC connecting guide

## 1 Serial Communication Pin definition

**Pin Designations**

**COM0/COM2**

**（male）**

Pin assignment of the 9-pin male, D-SUB, COM0/COM2. This port is used to connect MT5000/MT4000 series touch screens and provides RS-232/485/422 port.

**Note:** The COM2 port is used for programming and debugging, and it is also used for communication, but only provides RS-232 port controller.

| Pin # | Signal | PLC [RS-422] 4 wire | PLC [RS-485] 2 wire | PLC [RS-232] | PC / PLC [RS-232] |
|---|---|---|---|---|---|
| 1 | Rx-(B) | RS485 Rx | RS485B | | |
| 2 | RxD_PLC | | | RS232 Rx | |
| 3 | TxD_PLC | | | RS232 Tx | |
| 4 | Tx- | RS485 Tx | | | |
| 5 | GND | Signal ground | | | |
| 6 | Rx+(A) | RS485 Rx | RS485A | | |
| 7 | RxD_PC/ PLC | | | | RS232 Rx |
| 8 | TxD_PC/ PLC | | | | RS232 Tx |
| 9 | Tx+ | RS485Tx | | | |

**Pin Designations**

**COM1（female）**

Pin assignment of the 9-pin female, D-SUB, COM1. This port is used to connect MT5000/MT4000 series touch screens and provides RS-232/485/422 port.

Pin assignment of this port is basically the same as COM0. The only difference is that COM0 is connected with the RS-232 interface of the PC to serve as the hardware flow control signal for PLC-232 connection.

| Pin # | Signal | PLC [RS-422] 4 wire | PLC [RS-485] 2 wire | PLC [RS-232] |
|---|---|---|---|---|
| 1 | Rx-(B) | RS485 Rx | RS485B | |
| 2 | RxD_PLC | | | RS232 Rx |
| 3 | TxD_PLC | | | RS232 Tx |
| 4 | Tx- | RS485 Tx | | |
| 5 | GND | Signal ground | | |
| 6 | Rx+(A) | RS485 Rx | RS485A | |
| 7 | CTS_PLC | | | Clear to send |
| 8 | RTS_PLC | | | Request to send |
| 9 | Tx+ | RS485 Tx | | |

# 2 Parallel Port Pin Definition

The parallel printer port on the back of case can be used to connect with various parallel port printers on the market.

**Printout**

The full series of MT5000/MT4000 products support printout function. The printing port will export data when the printing component works.

The MT5000/MT4000 series touch screens support multiple printers, and Kinco HMItek Ltd. will continuously provide drivers for various brands of printers.

**Note:** The maximum distance of printer cable is 5m.

**Pin Designations**

**PRINTER(15-pin)**

Pin assignment of 15-pin, D-SUB, female, parallel printer port

| Pin# | Signal | Function | Pin# | Signal | Function |
|---|---|---|---|---|---|
| 1 | GND | Signal ground | 10 | BUSY | Input |
| 2 | DATA7 | Output | 11 | DATA8 | Output |
| 3 | DATA4 | Output | 12 | DATA5 | Output |
| 4 | DATA1 | Output | 13 | DATA2 | Output |
| 5 | STB | Output | 14 | INIT | Output |
| 7 | DATA6 | Output | 15 | nERROR | Input |
| 8 | DATA3 | Output | | | |

**PRINTER(25-pin)**

Pin assignment of 25-pin, D-SUB, female, parallel printer port

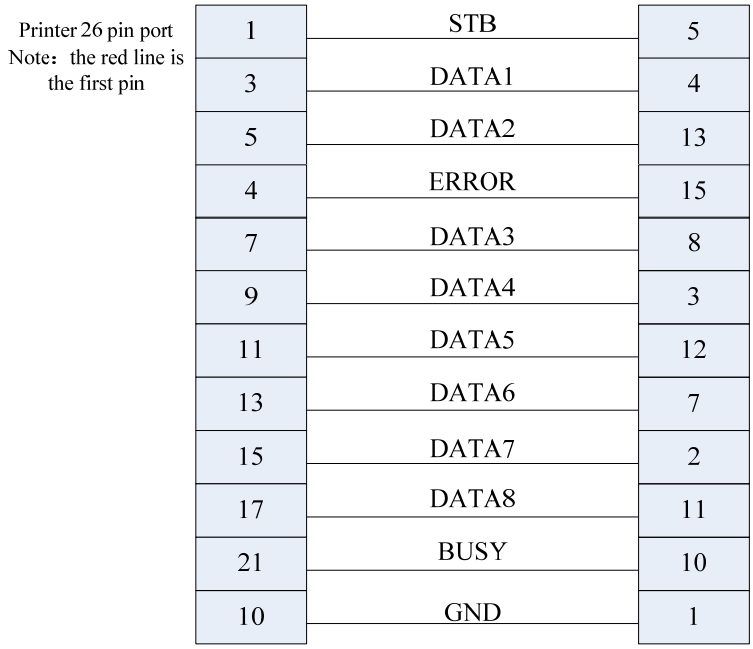
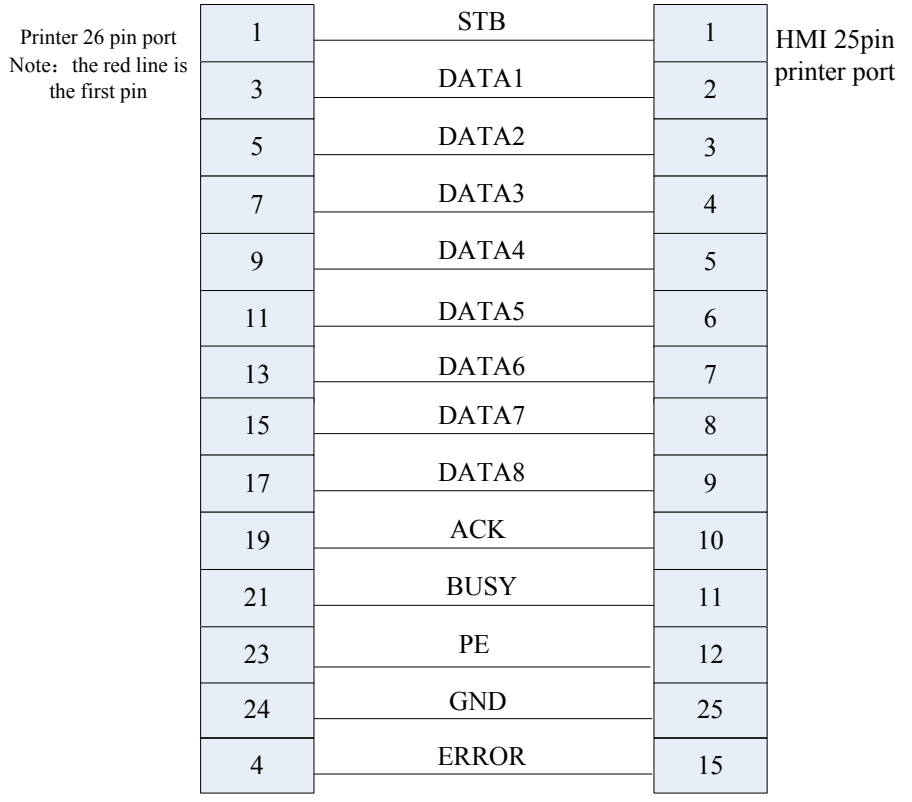
| Pin# | Signal | Function | Pin# | Signal | Function |
|---|---|---|---|---|---|
| 1 | STB | Output | 8 | DATA7 | Output |
| 2 | DATA1 | Output | 9 | DATA8 | Output |
| 3 | DATA2 | Output | 11 | BUSY | Input |
| 4 | DATA3 | Output | 15 | ERROR | Input |
| 5 | DATA4 | Output | 16 | INIT | Output |
| 6 | DATA5 | Output | 18-25 | GND | Signal ground |
| 7 | DATA6 | Output | | | |

# 3 Printer Connecting Cable Diagram

## 3.1 Parallel Printer Cable of SPRT SP-DN16PH/ WH4008A31-053 Printer

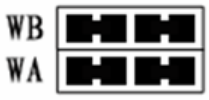
**Note:** WH4008A31 support printing of 240 dots width.

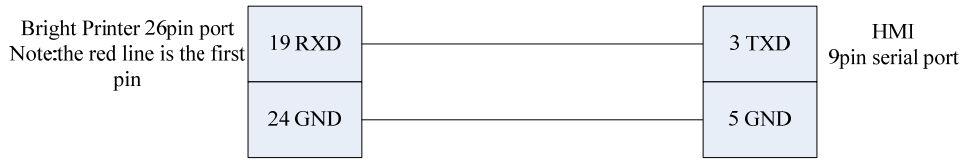
When use parallel interface, you should mount W1 block, parallel connect WA to WB for TTL level.

| 屏并口类型 | 接线图 |
|---|---|
| HMI 15 pin printer port |  |
| HMI 25 pin printer port |  |

### 3.2 Serial Interface Printer Cable of Bright Printer

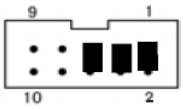
a. **WH4008A31-053** serial print mode, pulling up W1 short circuit block by RS232 level.

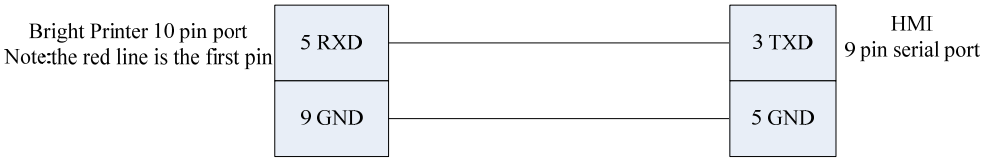



b. WH-A62R10 support printing of 190 dots width.

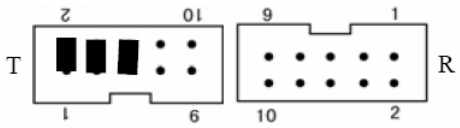
Serial port printing mode via RS232 level, short circuit as follows:

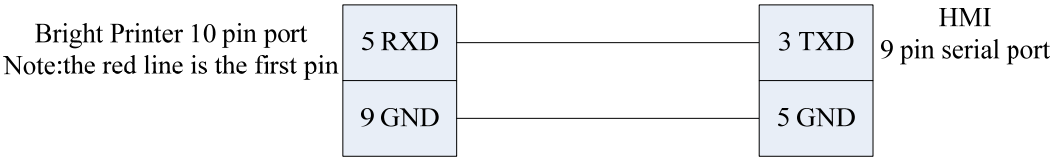



c. WH-A52Z20-30E125 support printing of 240 dots width.

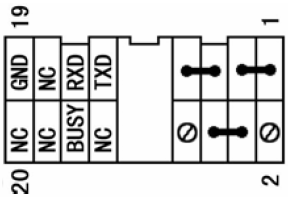
Serial port printing mode via RS232 level, short circuit as follows:

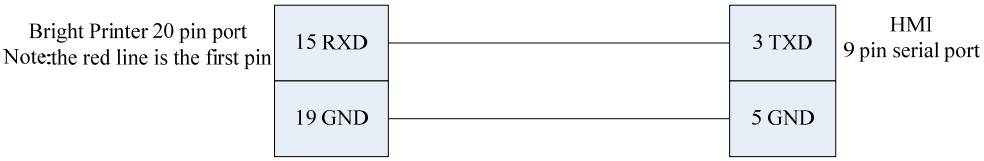


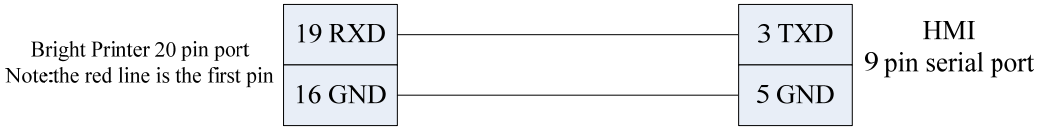

d. WH-A93RG0-00E825 now support printing of 384 dots width

Serial port printing mode via RS232 level, short circuit as follows:



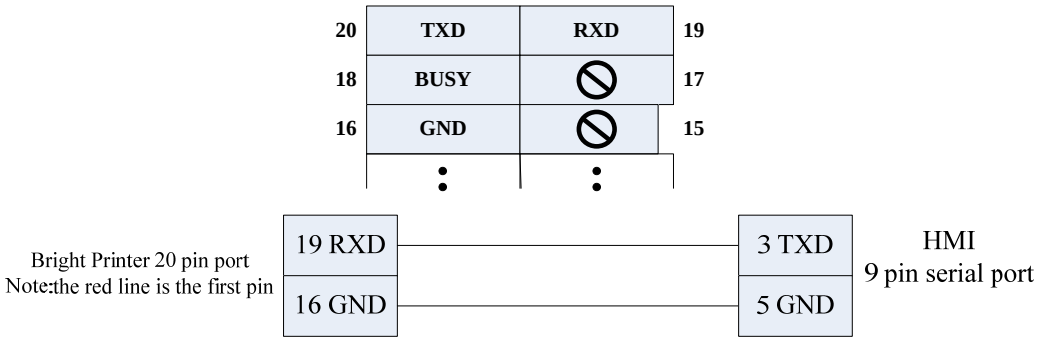



e. WH-E173R90-00E11720GA support printing of 192 dots width.



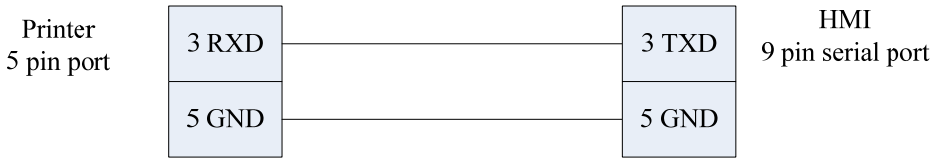

f. WH-E191RB0-00E1182055 support printing of 576 dots width (24).

Serial port printing mode via RS232 level



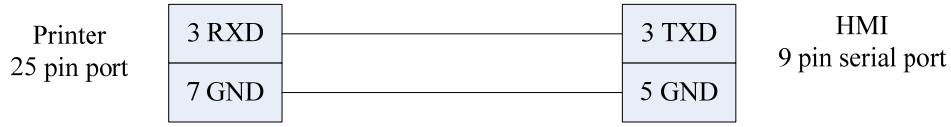

### 3.3 Siupo Printer cable

a. SP-E40004SK serial printer supports 240 dots width.



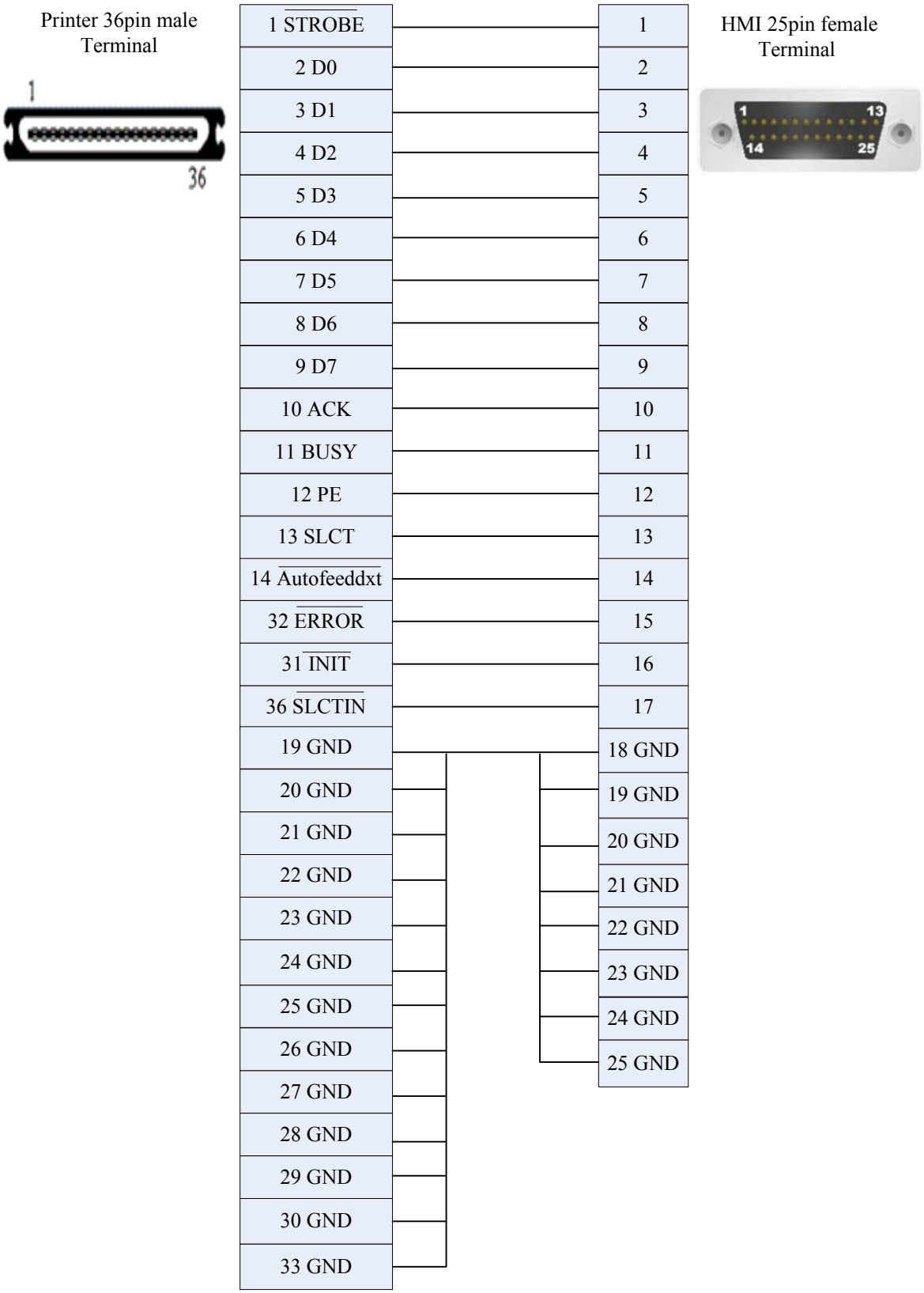

### 3.4 MY POS Printer cable

a. MY-POS80K serial printer which supports 240 dots width. 25 pin.

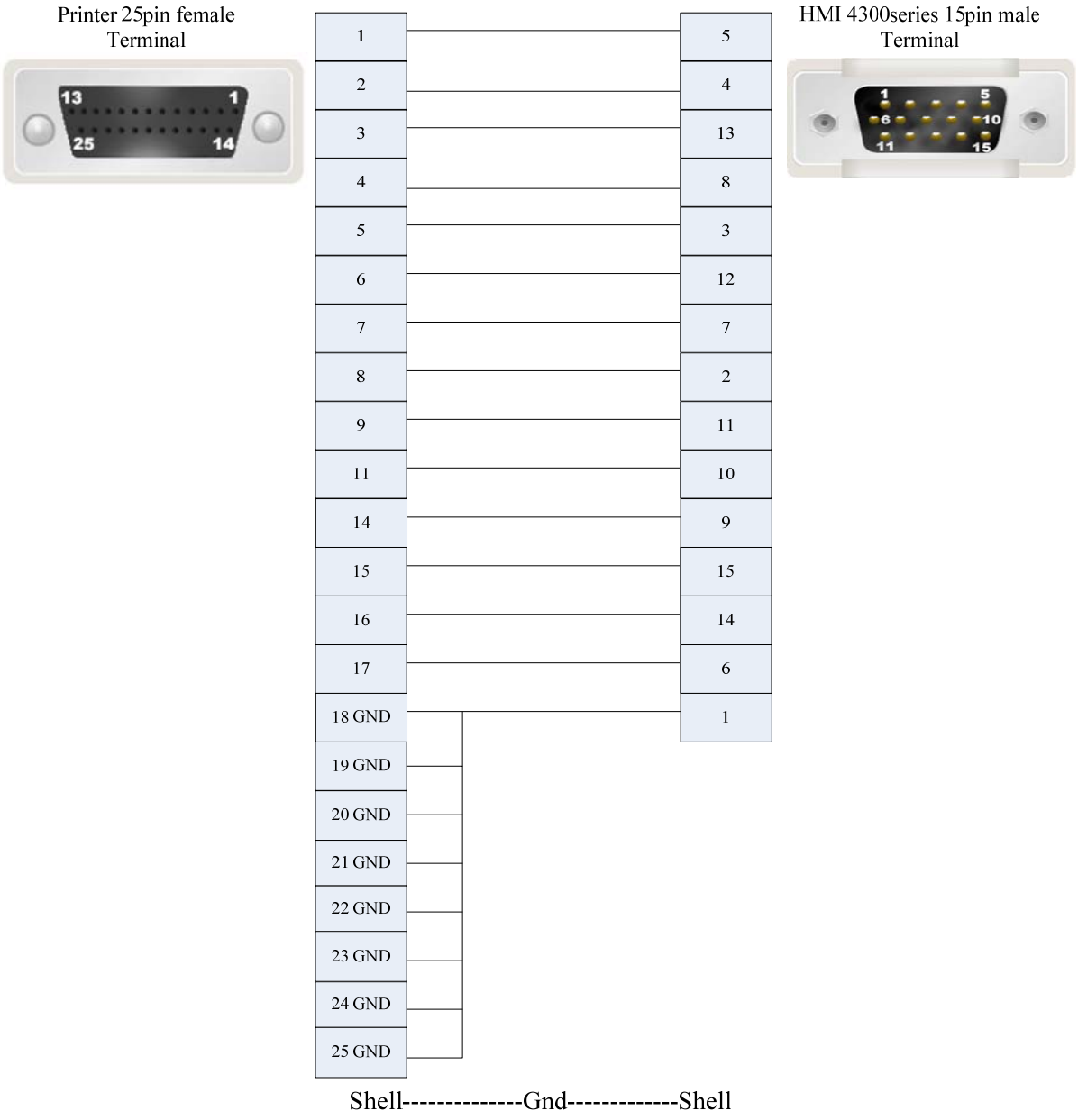



### 3.5 Parallel Printer Cable of EPSON/HP Printer

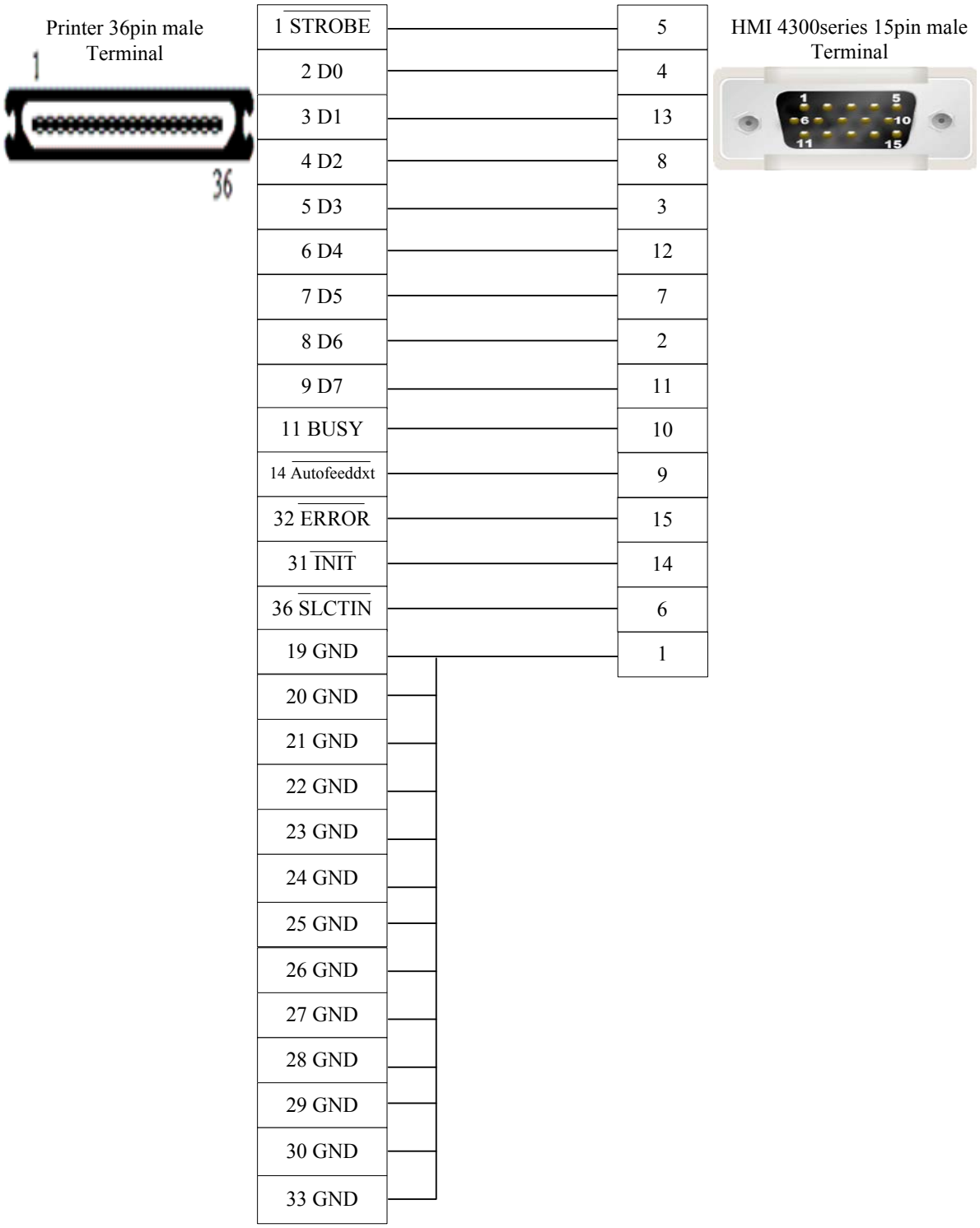
#### 3.5.1 Connecting cable of printer 36 pin to panel 25 pin




### 3.5.2 Printer series 25 pin convert to 15 pin of the MT4300 series touch screen




### 3.5.3 Connecting cable of printer 36 pin to panel 15 pin




### 3.6 Recommend Optional printer

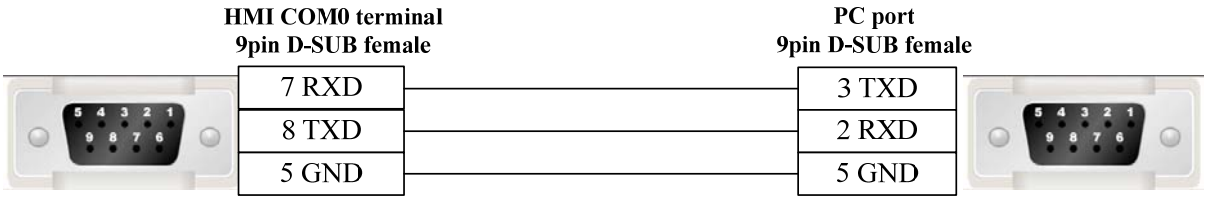
| Printer Driver | Printer model | Interface | Print Structure | Print format |
|---|---|---|---|---|
| EPSON ESC/P | EPSON ME30 | USB | inkjet printer | A4 |
| | EPSON ME300 | USB | inkjet printer | A4 |
| EPSON ESC/P2 | EPSON LQ305KT | Parallel | Stylus printer | A4 |
| | EPSON LQ-630K | USB | Stylus printer | A4 |
| HP PCL5e | HP LaserJet p2014 | Parallel \USB | laser | A4 |

| | | | | |
|---|---|---|---|---|
| | HP Photosmart D5368 | USB | inkjet printer | A4 |
| SPRT SP-DN16PH | SP-DN16PH | Parallel | Stylus micro printer | 240 dots/line |
| | SP-RMDIV16PH | Parallel | thermal | 240 dots/line |
| WH4008A31-053 | WH4008A31-053 | Parallel | Stylus micro printer | 240 dots/line |
| | WH4008A31 | Parallel | Stylus micro printer | 240 dots/line |
| | WH4008A32-053 | Parallel | Stylus micro printer | 240 dots/line |
| | WH-A52Z20-30E125 | serial | Stylus micro printer | 240 dots/line |
| | WH-A52Z20-40E125 | serial | Stylus micro printer | 240 dots/line |
| WH-A62R10 | WH-A62R10 | Parallel | thermal | 192 dots/line |
| | WH-A93RG0-00E725 | Serial | thermal | 192 dots/line |
| | WH-E173R90-00E11720GA | Serial | thermal | 192 dots/line |
| WH-A93RG0-00E825 | WH-A93RG0-00E825 | Serial | thermal | 384 dots/line |
| WH-E191RB0-00E1182055 | WH-E191RB0-00E1182055 | Serial | thermal | 576 dots/line |
| Siupo SP-M, D, E, F | SP-E4004SK | Serial | Stylus micro printer | 240 dots/line |
| MY-POS80K | MY-POS80K | Serial | thermal POS | 240 dots/line |

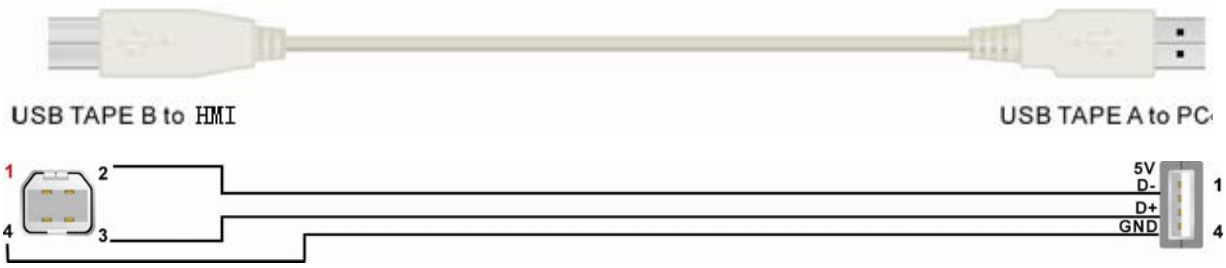
# 4 Download Cable Diagram

## 4.1 Download by Serial Port

The COM2 port on the back of the case can be used to connect PLC RS-232 devices and can also be used to connect with the programming interface and setting interface of a PC.




## 4.2 Download by USB




## 4.3 Download by Network Ethernet

Connecting PC and HMI use cross-ruling; communicating with hub or switch use Cross-over cable or cross-ruling.

A. cross-ruling cable diagram:

| HMI Ethernet terminal RJ45 | | Controller terminal RJ45 |
|---|---|---|
| 1 TX+ | (orange,white) | 3 RX+ （green,white） |
| 2 TX- | （orange) | 6 RX- （green） |
| 3 RX+ | (green,white) | 1 TX+（orange,white） |
| 4 BD4+ | (blue) | 4 BD4+（blue） |
| 5 BD4- | (blue,white) | 5 BD4- （blue,white） |
| 6 RX- | (green) | 2 TX- （orange） |
| 7 BD3+ | (brown,white) | 7 BD3+ (brown,white) |
| 8 BD3- | (brown) | 8 BD3- （brown） |

B. cross-over cable diagram:

| **HMI Ethernet terminal RJ45** | **Ethernet Hub or Switch RJ45** |
|---|---|
| 1 TX+ (orange,white) | 1 RX+（orange,white） |
| 2 TX- ( orange) | 2 RX- （orange） |
| 3 RX+ (green,white) | 3 TX+ （green,white） |
| 4 BD4+ (bule) | 4 BD4+ （bule） |
| 5 BD4- (bule,white) | 5 BD4- （bule,white） |
| 6 RX- (green) | 6 TX- （green） |
| 7 BD3+ (brown,white) | 7 BD3（brown,white） |
| 8 BD3- (brown) | 8 BD3- （brown） |

# 5 Refresh Kernel and Rootfs

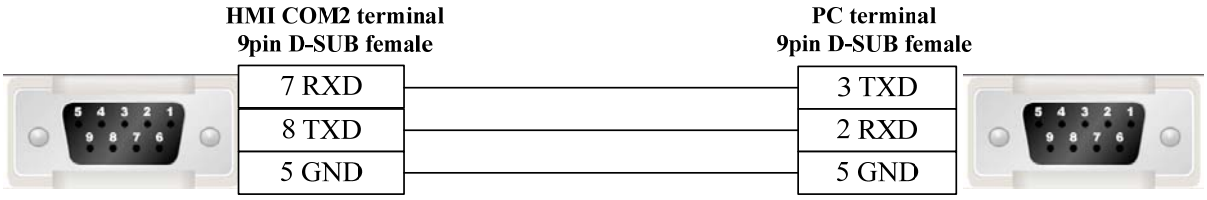
There are three methods to refresh kernel and rootfs:

1. Refresh kernel and rootfs by serial port;
2. Refresh kernel and rootfs by Ethernet port;
3. Refresh kernel and rootfs by USB port.

Note: updated kernel and file system by USB, 4000 series, 5020 series screen and the Kinco HMIware software must be after the November 2009 version.

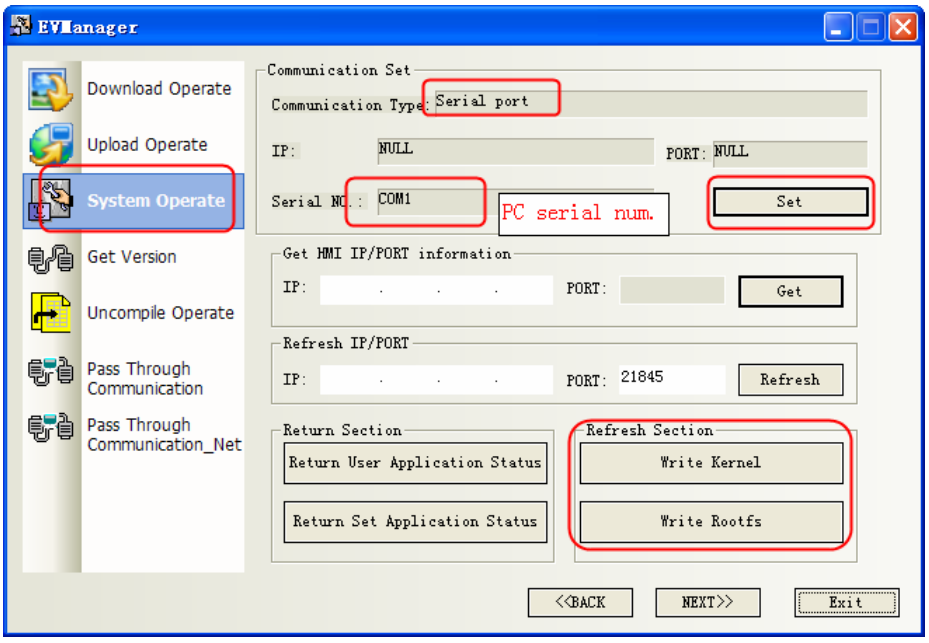
## 5.1 Refresh by serial port

1. Make a serial cable as follow:




2. Set the sw1 to on, sw2 to off on the back of the panel.

3. Open the EVManager tool to select “system operate”---“communication set”, set the serial num. before refresh kernel and rootfs.



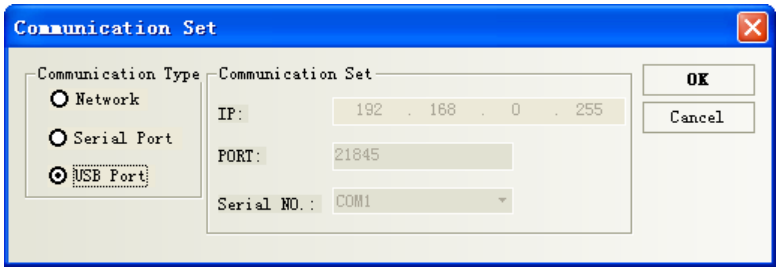
4. Set sw2 to on, sw1 to off on the back of the panel after refresh, you can touch calibrate in the mode. Press the "+" until the panel show "TP adjust successful", and then reset.
5. Make switches to default set and reset.
6. Re-download the project to panel.

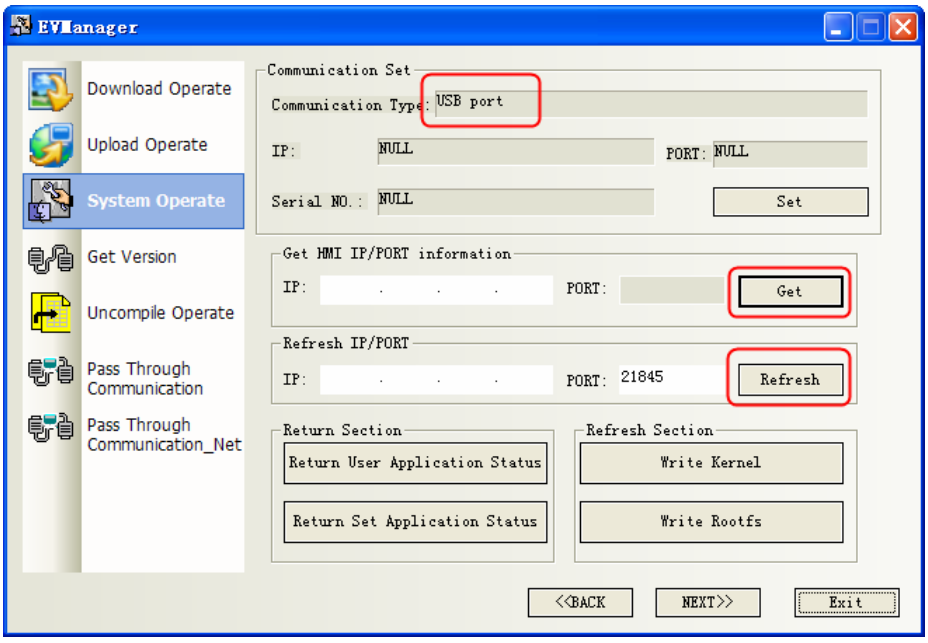
### 5.2 Refresh by Ethernet port

1. Set sw1 and sw2 to off on the back of the panel.

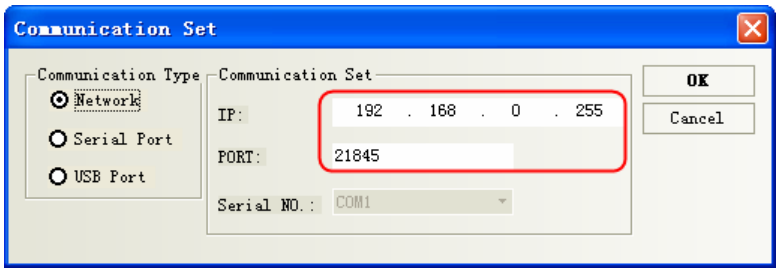
2. Connect the panel with USB cable and set IP address.

Open the Evmanager tool to click set. Select the USB Port in the "Communication Set" dialog box, and then click "OK". Click "Get" to get HMI IP information and set a new IP in "Refresh IP/port" box, then click "Refresh".



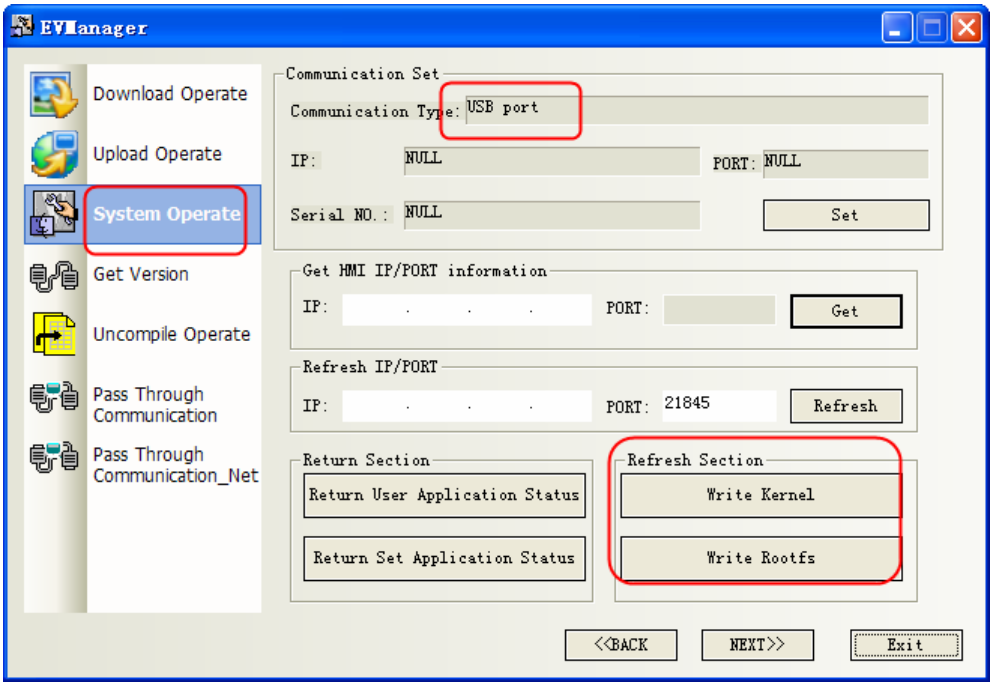
Click “set” and set the IP in the “communication set” dialog box.




3. Set the IP OK, and then set sw1 to on, sw2 to off, at the same time to reset.
Click “Write kernel” and “Write rootfs”. If you can’t refresh, check the IP and the cable.
4. Set sw2 to on, sw1 to off on the back of the panel after refresh, you can touch calibrate in this mode. Press the “+” until the panel show “TP adjust successful”, and then reset.
5. Set sw1 and sw2 to off on the back of the panel, and then reset.

### 5.3 Refresh by USB port

1. Set the sw1 to on, sw2 to off on the back of the panel.
2. Open the EVManager tool to select “system operate”---“communication set”, set the USB Port before refresh kernel and rootfs.



# 6 Communication Settings and guide of HMI connecting with Controller

**Note：Do not hot plug！**

## 6.1 ABB Corporation

### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| ABB AC31 | O7KR51-V3.6 | RS232 on the CPU unit<br>RS485 | ABB AC31 Modbus RTU |
| ABB AC500 | PM571<br>PM581<br>PM591 | RS232 on the CPU unit | ABB AC500 |

### System configuration

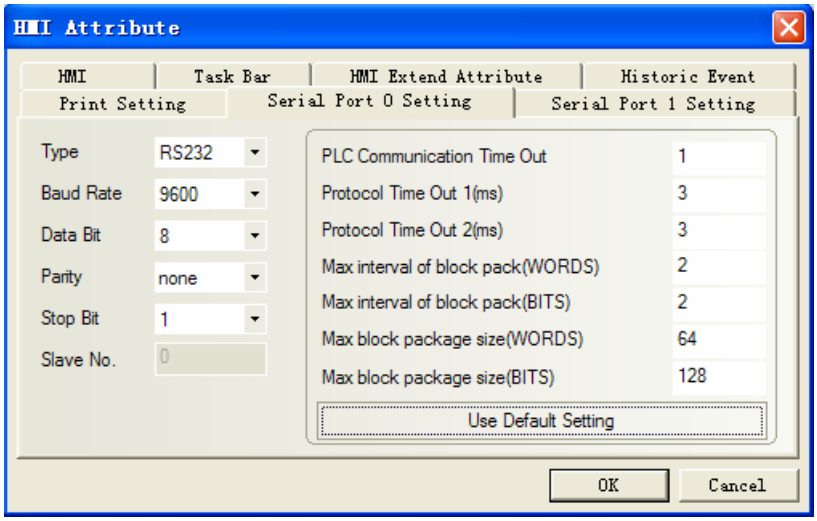
| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| ABB AC31 | O7KR51-V3.6 | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 | RS485-2 | Setting | Your owner cable |
| ABB AC500 | PM571<br>PM581<br>PM591 | RS232 on the port 1 | RS232 | Setting | Your owner cable |
| | | RS232 on the port 2 | RS232 | Setting | Your owner cable |

### Communication Settings

#### HMI

**ABB AC31**：Default communication parameters 9600, 8, none, 1; station No. : 1

RS232




RS485

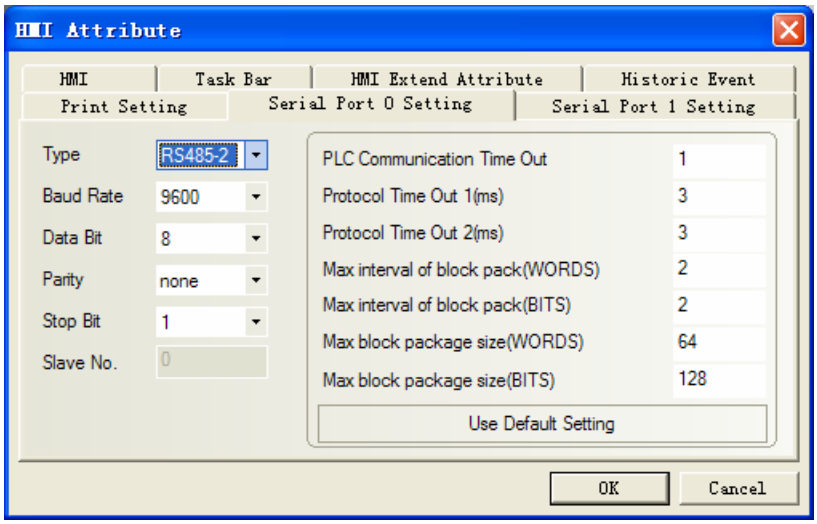
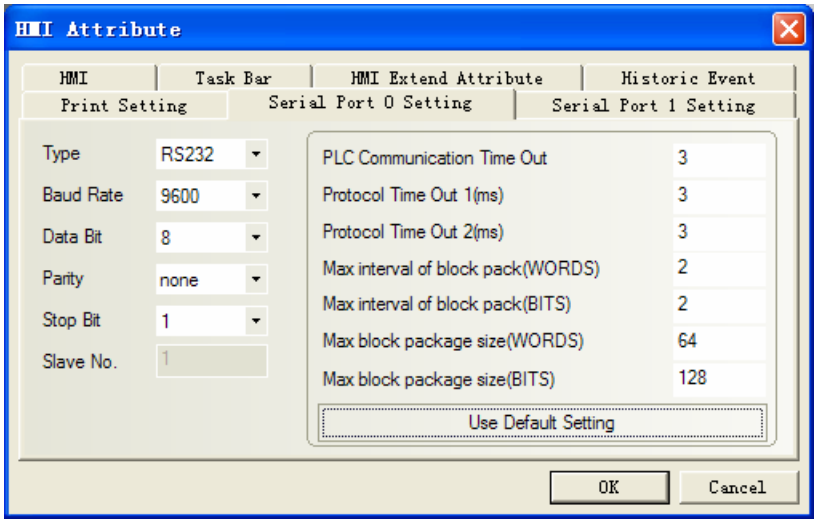



**ABB AC500**：Default communication parameters 9600, 8, none, 1; station No. : 1

RS232




## Supported Device

**ABB AC31**

| Device | Bit Address | Word Address | Format |
|---|---|---|---|
| Input bit | I00.00-68.15 | ------ | DD.DD |
| Output bit | O00.00-68.15 | ------ | DD.DD |
| Internal Relay | M(0.0--99.15)U(233.00-255.15) | ------ | DDD.DD |
| Link Relay | S000.00-125.15 | ------ | DDD.DD |
| Input Register | ------ | IW00.00-68.15 | DD.DD |
| Output Register | ------ | OW00.00-68.15 | DD.DD |
| Internal Register | ------ | MW(0.0--99.15)U(233.00-255.15) | DDD.DD |
| Indirect Register | ------ | KW01.00-31.15 | DD.DD |

| | | | |
|---|---|---|---|
| Internal Register (Double words) | ------ | MD0.00-7.15 | D.DD |
| Indirect Register (Double words) | ------ | KD0.00-7.15 | D.DD |

**ABB AC500**

| Device | Bit Address | Word Address | Format |
|---|---|---|---|
| PLC Register | MB0.0—8191.7 | ------ | DDDD.O |
| Internal Register | ------ | MW0.0—1.32767 | D.DDDDD |
| Internal Register (Double words) | ------ | MD0.0—1.16383 | D.DDDDD |

**Note：**

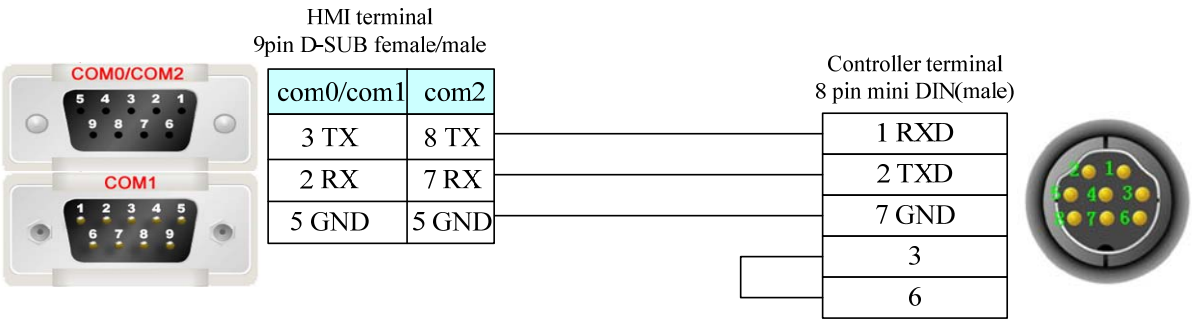
1）Select “MODBUS” mode in the ABB AC500 programming software;

2）If selecting “COM1 MODBUS”, serial communication setting must be “slave” in the 15th “Operation mode”. Other parameters match the touch-screen.

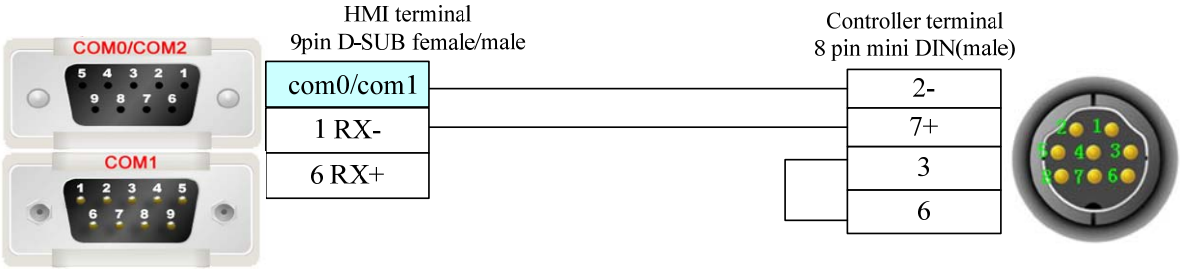
3）Example: MB address: 0.0.1, please input 0.1 in the HMI.

# Cable Diagram

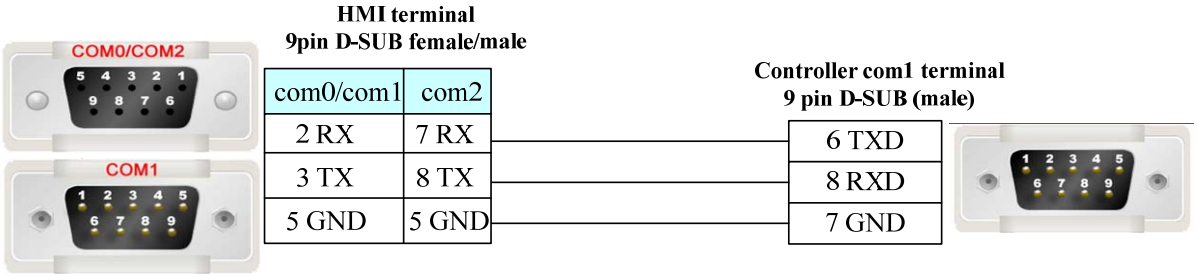
## ABB AC31 RS232



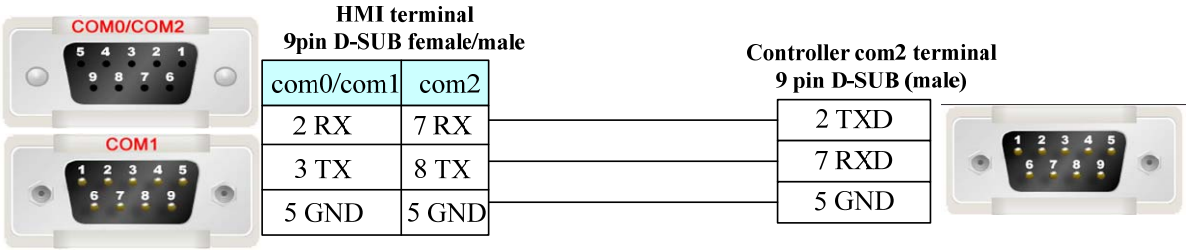

## ABB AC31 RS485




## ABB AC500 port1 RS232




### ABB AC500 port2 RS232




## 6.2 Allen-Bradley

### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| MicroLogix | MicroLogix 1500 (1764-LRP) | Channel 1 | AB DF1 |
| | MicroLogix 1000<br>MicroLogix 1200<br>MicroLogix 1500<br>(1764-LSP,1764-LRP) | Channel 0 | |
| | | AIC+ Advanced Interface Converter<br>1761-NET-AIC | |
| | MicroLogix 1400<br>(1766-L32BWAA) | Channel 0 | |
| | | Channel 2 | |
| SLC500 | SLC 5/03<br>SLC 5/04<br>SLC 5/05 | Channel 0 | |
| | | 1770-KF3<br>2760-RB<br>1775-KA<br>5130-RM | |
| | | 1771-KGM | |
| PLC-5 | PLC-5/11<br>PLC-5/20<br>PLC-5/30<br>PLC-5/40<br>PLC-5/40L<br>PLC-5/60<br>PLC-5/60L | Channel 0 | |

| | | | |
|---|---|---|---|
| CompactLogix | 1769-L20<br>1769-L30<br>1769-L31<br>1769-L32E<br>1769-L35E | Channel 0<br>Channel 1 | AB CompactLogix/ControlLogix |
| ControlLogix | 1756−L61<br>1756-L63 | CPU Direct | AB CompactLogix/ControlLogix |

## **Ethernet Communication** (Direct Online Simulation disable)

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| MicroLogix | MicroLogix 1100<br>MicroLogix 1400 | CPU Direct (channel 1) | AB EtherNet/IP Slave |
| | MicroLogix 1000<br>MicroLogix 1100<br>MicroLogix 1200<br>MicroLogix 1400<br>MicroLogix 1500 | 1761-NET-ENI | |
| SLC500 | SLC5/05 | CPU Direct (channel 1) | |
| | SLC5/03<br>SLC5/04<br>SLC5/05 | 1761-NET-ENI | |
| PLC-5 | ALL CPUs that support the link I/F on the right | 1761-NET-ENI | |

## **Serial System Communication**

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| MicroLogix | MicroLogix 1500 (1764-LRP) | Channel 1 | RS232C | Setting | Your owner cable |
| | MicroLogix 1000<br>MicroLogix 1200<br>MicroLogix 1500 | Channel 0 | | | Your owner cable |
| | | AIC+ Advanced Interface Converter<br>1761-NET-AIC | | | |
| | MicroLogix 1400 | Channel 0 | RS232C | Setting | Your owner cable |
| | | Channel 2 | | | Your owner cable |
| SLC500 | SLC 5/03<br>SLC 5/04<br>SLC 5/05 | Channel 0 | RS232C | Setting | Your owner cable |
| | | 1770-KF3<br>2760-RB<br>1775-KA<br>5130-RM | | | |
| | | 1771-KGM | | | |

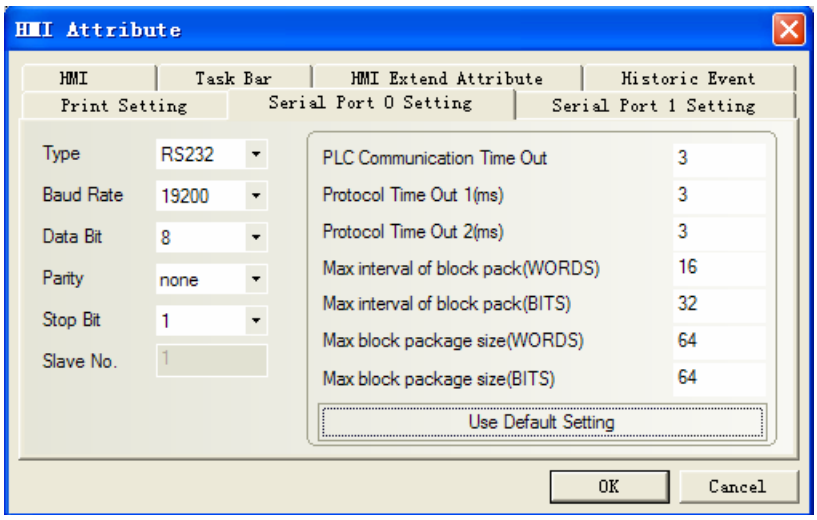
| | | | | | |
|---|---|---|---|---|---|
| PLC-5 | PLC-5/11<br>PLC-5/20<br>PLC-5/30<br>PLC-5/40<br>PLC-5/40L<br>PLC-5/60<br>PLC-5/60L | Channel 0 | RS232C | Setting | Your owner cable |
| CompactLogix | 1769-L20<br>1769-L30<br>1769-L31<br>1769-L32E<br>1769-L35E | Channel 0<br>Channel 1 | RS232C | Setting | Your owner cable |
| ControlLogix | 1756－L61 | CPU Direct | RS232C | Setting | Your owner cable |

## Ethernet System Communication

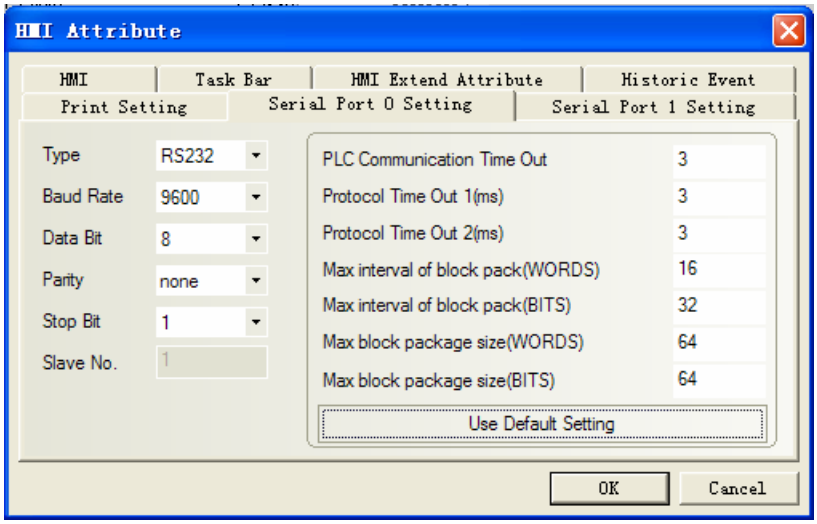
| Series | CPU | Link Module | Connect Type | Parameter | Cable |
|---|---|---|---|---|---|
| MicroLogix | MicroLogix 1100<br>MicroLogix 1400 | CPU Direct (channel 1) | Ethernet | Setting | Your owner cable |
| | MicroLogix 1000<br>MicroLogix 1100<br>MicroLogix 1200<br>MicroLogix 1500 | 1761-NET-ENI | | | |
| SLC500 | SLC5/05 | CPU Direct (channel 1) | | | |
| | SLC5/03<br>SLC5/04<br>SLC5/05 | 1761-NET-ENI | | | |
| PLC-5 | ALL CPUs that support the link I/F on the right | 1761-NET-ENI | | | |

## Serial Communication Setting

### MicroLogix/ PLC-5 RS232 communication

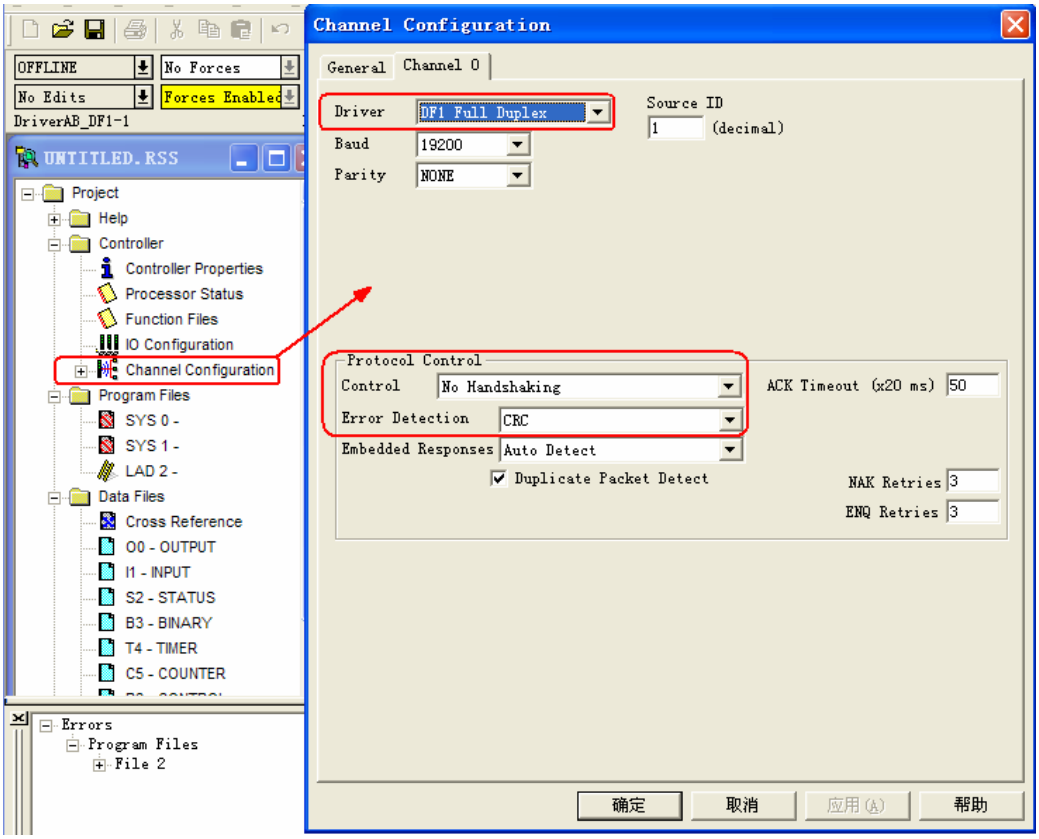



## SLC500 RS232 communication

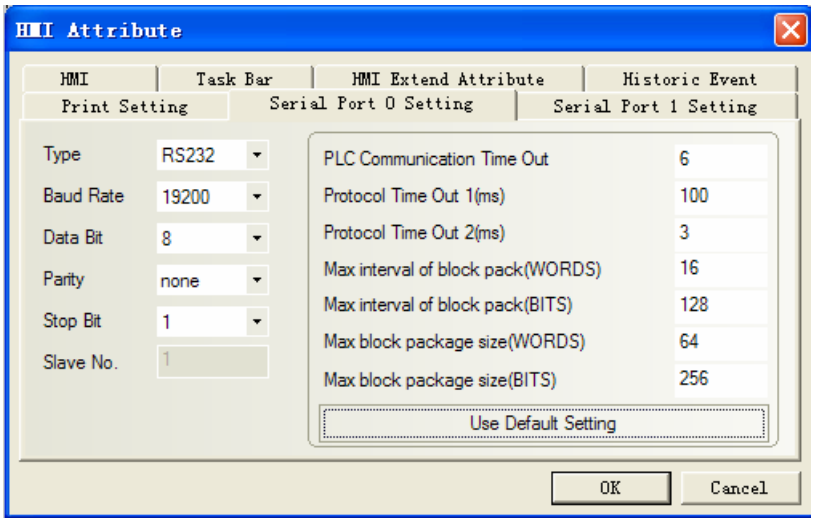



## RSLogix500 software setting

**Note:** Driver: DF1 Full Duplex; Error Detection: CRC.



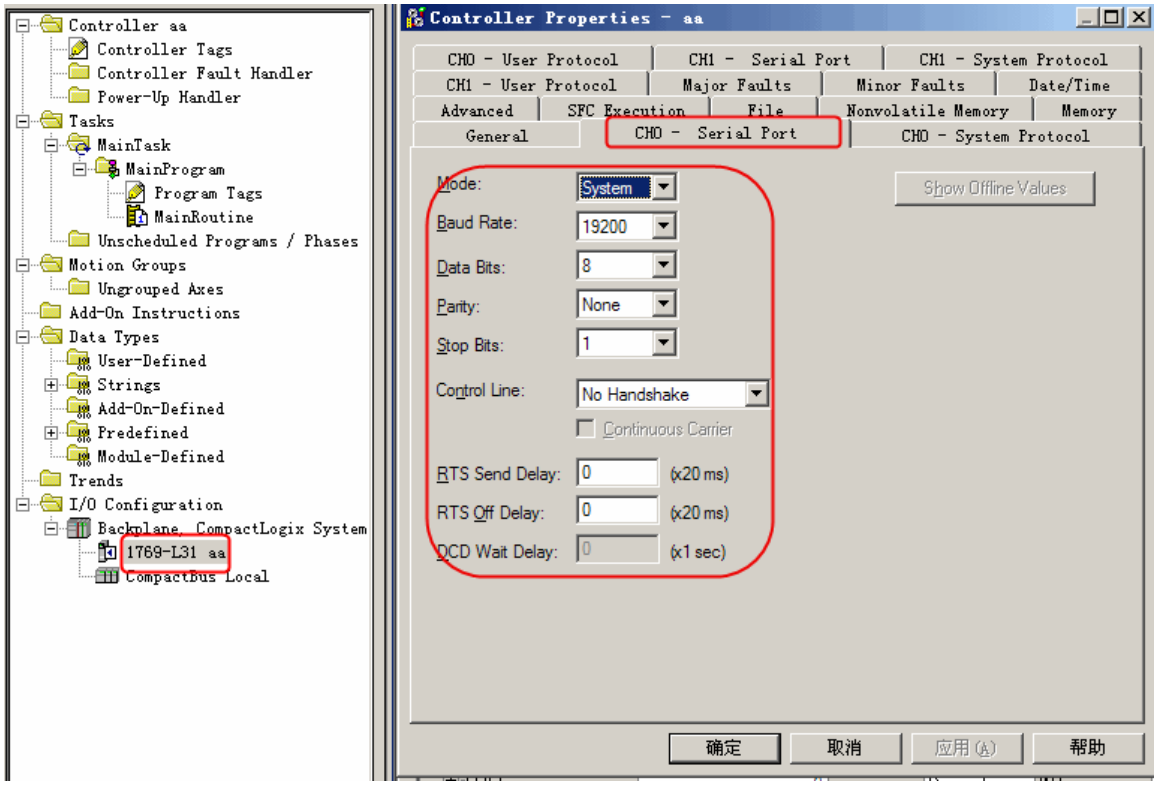

## CompactLogix/ControlLogix RS232 communication

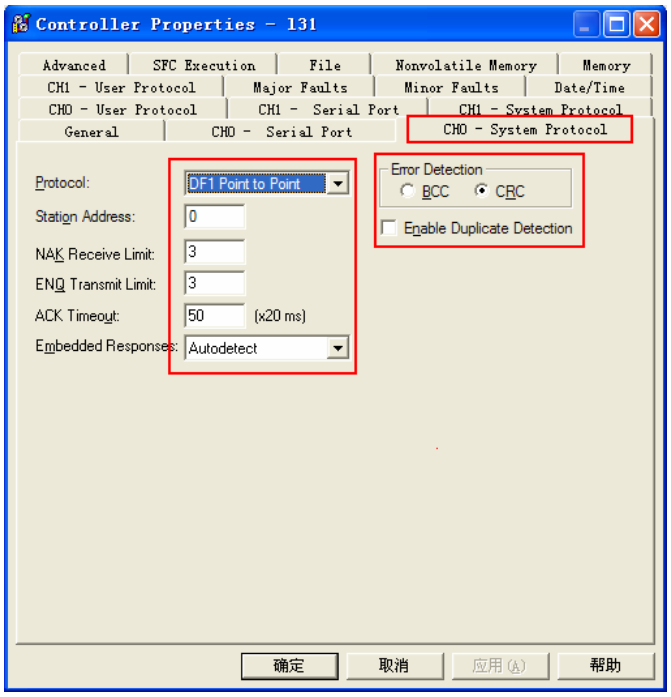



## RSLogix5000 software setting

**Note:** Protocol: DF1 Point to Point; Error Detection: CRC; Enable Duplicate Detection: Disabled.

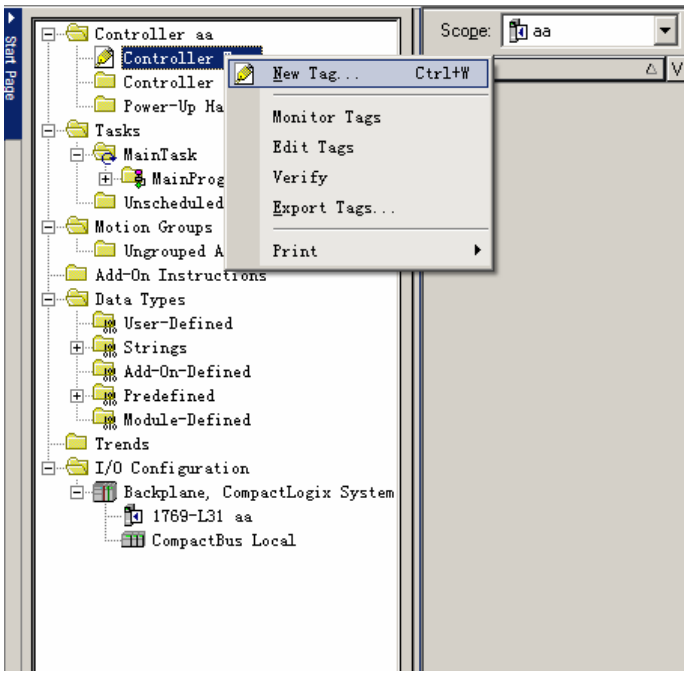
（1）**Set the communication parameters:** Controller properties



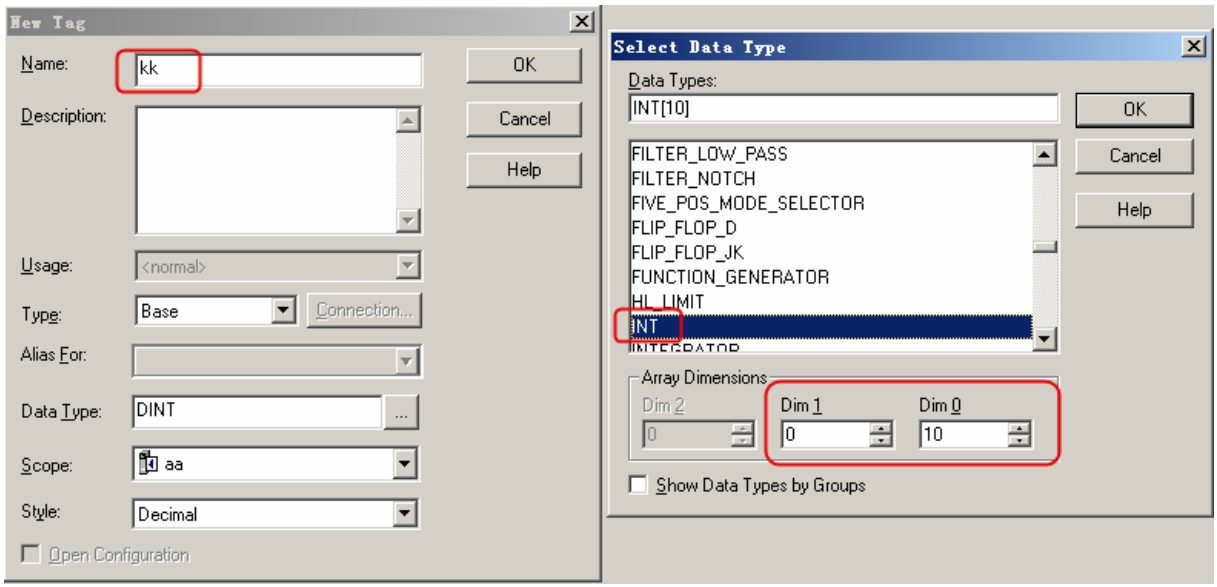




**Note:** Define the new device in the RSLogix5000 before using the register in the HMI.

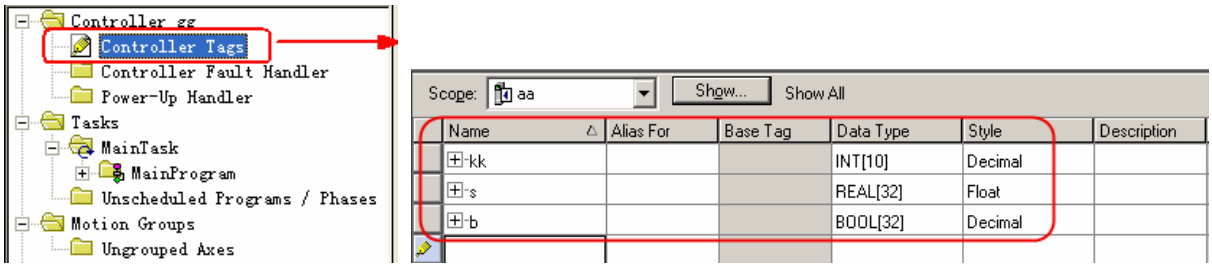
(2) **Define Tags and Data type**: select “controller tags” right-click—>”edit tags”, set up Tags:




Example : Tag kk, s, b



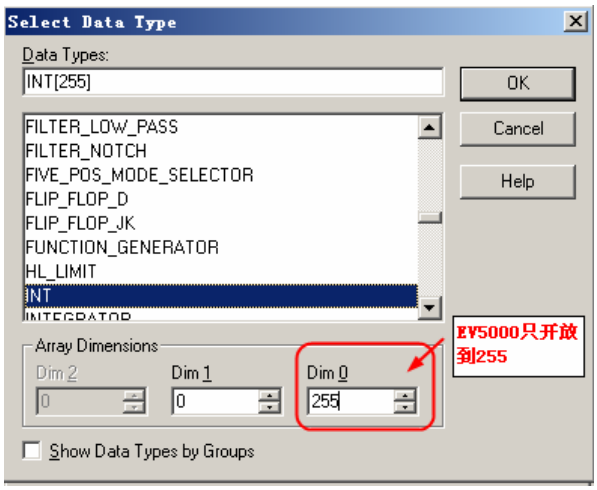

s, b to create Tags in the same way kk, the final results in the following tags:



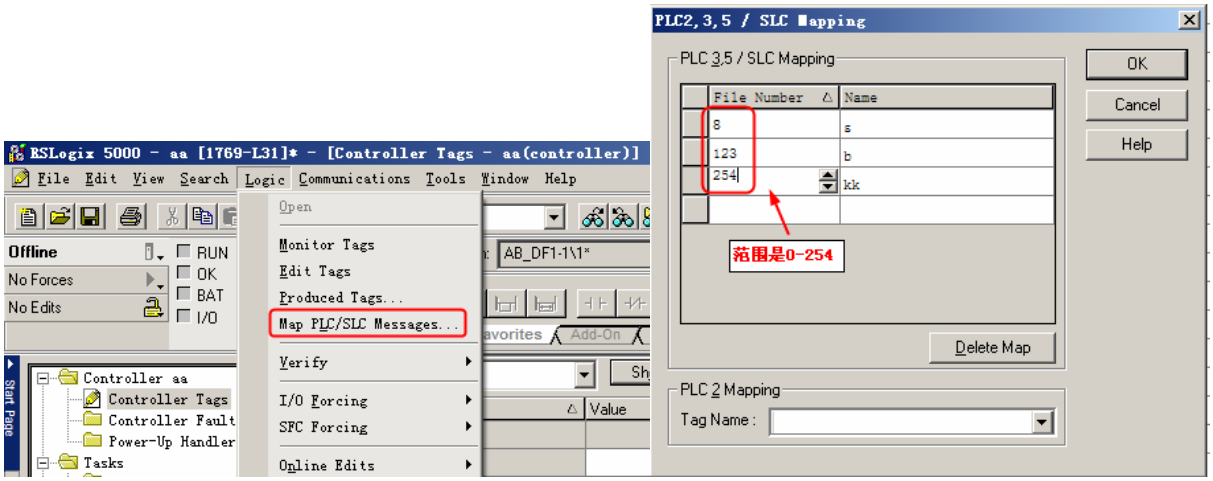

Note: 1. Controller internal registers communicate with touch-screen, you must first define tags in the RSLogix5000 software. Which can only be built in the Controller Tags, the tags set up elsewhere, Kinco HMIware is not available.

2. When the Data Type isn't defined data array, only one address is available to use; how to define the

Tag Number, you can refer to the RSLogix5000 manual.




(3) **Assign the Tag Name created by RSLogix5000 to the optional File Name:** select “logic”--->”map PLC/SLC messages”.（Note: the state of program software change to offline）

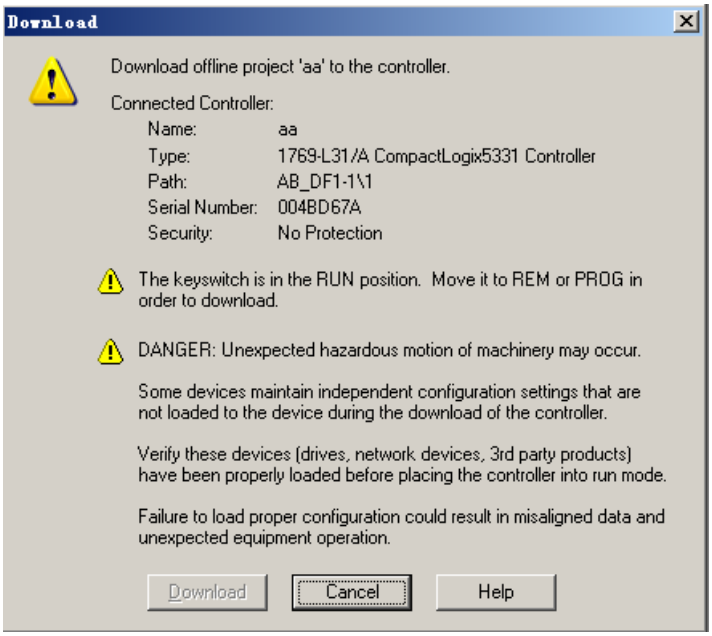



**Note:** You can not assign different Tag Names to the same File Number.

Kinco HMIware address corresponding to the above address, between the table below

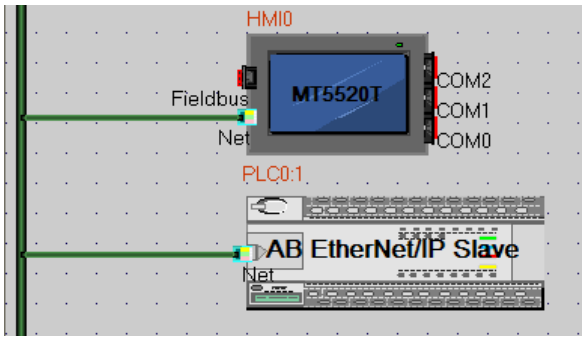
| Name | Data Type | File Number | Kinco HMIware address |
|---|---|---|---|
| kk | INT[10] | 254 | INT 254000~254009 |
| kk | BOOL | 254 | N_BOOL 254000.00~254009.15 |
| s | REAL[32] | 8 | REAL 8000~8031 |
| b | BOOL[32] | 123 | B_BOOL 123000~123031 |

**（4）Download the PLC program, pay attention to toggle the key to the PROG or REM mode, otherwise an error prompt**

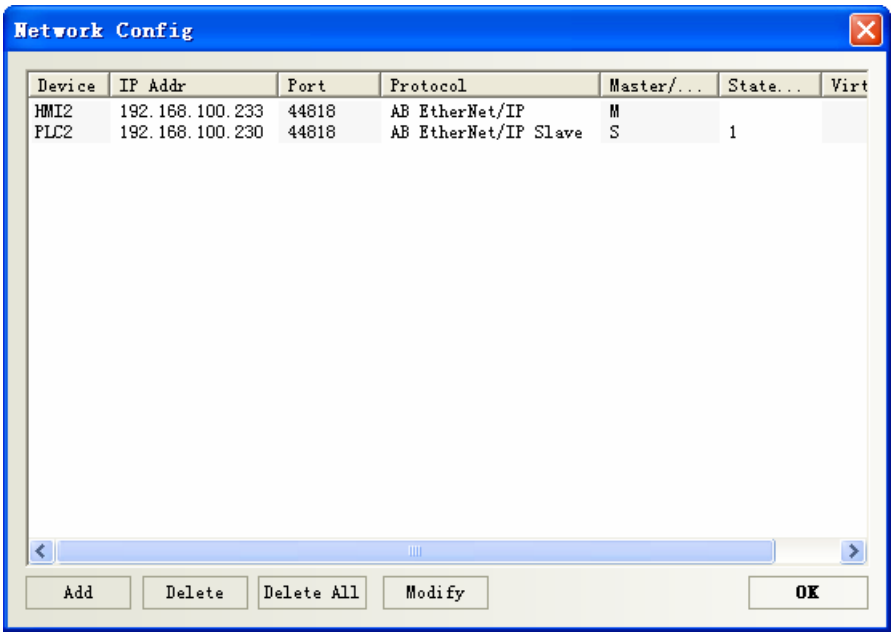

Download
Download offline project 'aa' to the controller.
Connected Controller:
Name: aa
Type: 1769-L31/A CompactLogix5331 Controller
Path: AB_DF1-1\1
Serial Number: 004BD67A
Security: No Protection
The keyswitch is in the RUN position. Move it to REM or PROG in order to download.
DANGER: Unexpected hazardous motion of machinery may occur.
Some devices maintain independent configuration settings that are not loaded to the device during the download of the controller.
Verify these devices (drives, network devices, 3rd party products) have been properly loaded before placing the controller into run mode.
Failure to load proper configuration could result in misaligned data and unexpected equipment operation.
Download
Cancel
Help

## Ethernet Communication Setting

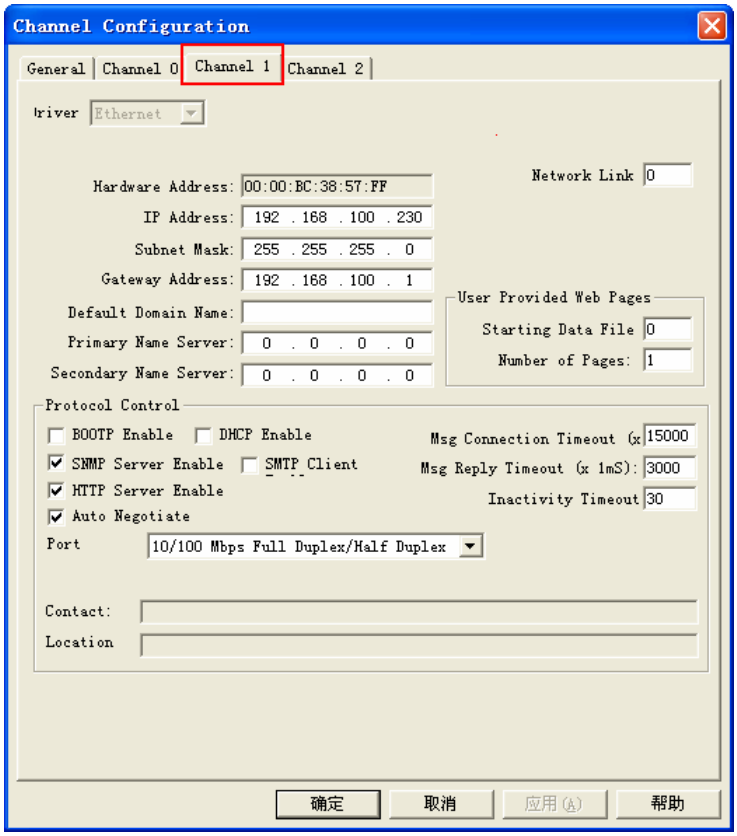
HMI




Network configuration



PLC configuration




# Supported Device

## MicroLogix 1200

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Bit data file | B10：0.0-254.15 | ------ | DDD.DD | |
| Bit data file | B3：0.0-254.15 | ------ | DDD.DD | |
| Output data file | O0：0.0-0.63 | ------ | DD.DD | |
| Input data file | I1：0.0-0.63 | ------ | DD.DD | |
| Integer data file | ------ | N15：0 | D | |
| Integer data file | ------ | N14：0 | D | |
| Integer data file | ------ | N11：0-68 | DD | |
| Integer data file | ------ | N7：0-254 | DDD | |
| Floating point data file | ------ | F8：0-253 | DDD | |
| Counter Accumulator Value | ------ | C5PV：0 | D | |
| Counter Preset Value | ------ | C5SV：0 | D | |
| Timer Accumulator Value | ------ | T4PV：0-35 | DD | |
| Timer Preset Value | ------ | T4SV：0-35 | DD | |

**Note:** I1 address: 0/11, please input 0.11 in the ev5000; other register bits address are the same as I register.

## Compactlogix L31

| Device | Bit Address | Word Address | Format |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Integer data file bit level | N_INT000000.00~254254.15 | ------ | FFFDDD.DD |
| Bit data file | B_BOOL000000~254991 | ------ | FFFDDD |
| Floating point data file | ------ | REAL000000~254254 | FFFDDD |
| Integer data file | ------ | INT000000~254254 | FFFDDD |

**Note:** 1. FFF: file number; DDD: variable address. The correct format example as follow: file number112, variable address 87.12, format is 112087.12. Variable less than three address the need to fill the former 0.

2. Users can define the File Number.

### AB EtherNet/IP Slave protocol

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Bit data file | B13：0.0-255.15 | ------ | DDD.DD | |
| Bit data file | B12：0.0-255.15 | ------ | DDD.DD | |
| Bit data file | B11：0.0-255.15 | ------ | DDD.DD | |
| Bit data file | B10：0.0-255.15 | ------ | DDD.DD | |
| Bit data file | B3：0.0-255.15 | ------ | DDD.DD | |
| Bit data file | Bf:n：0.0-255255.15 | ------ | FFFDDD.DD | *1 |
| Output bit data file | O0：0.0-255.15 | ------ | DD.DD | |
| Input bit data file | I1：0.0-255.15 | ------ | DD.DD | |
| Output data file | ------ | OW0：0-255 | DDD | |
| Input data file | ------ | IW1：0-255 | DDD | |
| Integer data file | ------ | N15：0-255 | DDD | |
| Integer data file | ------ | N14：0-255 | DDD | |
| Integer data file | ------ | N13：0-255 | DDD | |
| Integer data file | ------ | N12：0-255 | DDD | |
| Integer data file | ------ | N11：0-255 | DDD | |
| Integer data file | ------ | N10：0-255 | DDD | |
| Integer data file | ------ | N7：0-255 | DDD | |
| Integer data file | ------ | Nf:n：0-255255 | FFFDDD | *1 |
| Floating point data file | ------ | F8：0-255 | DDD | |
| Floating point data file | ------ | Ff:n：0-255255 | FFFDDD | *1 |
| Counter Accumulator Value | ------ | C5PV：0-255 | DDD | |
| Counter Preset Value | ------ | C5SV：0-255 | DDD | |
| Timer Accumulator Value | ------ | T4PV：0-255 | DDD | |
| Timer Preset Value | ------ | T4SV：0-255 | DDD | |

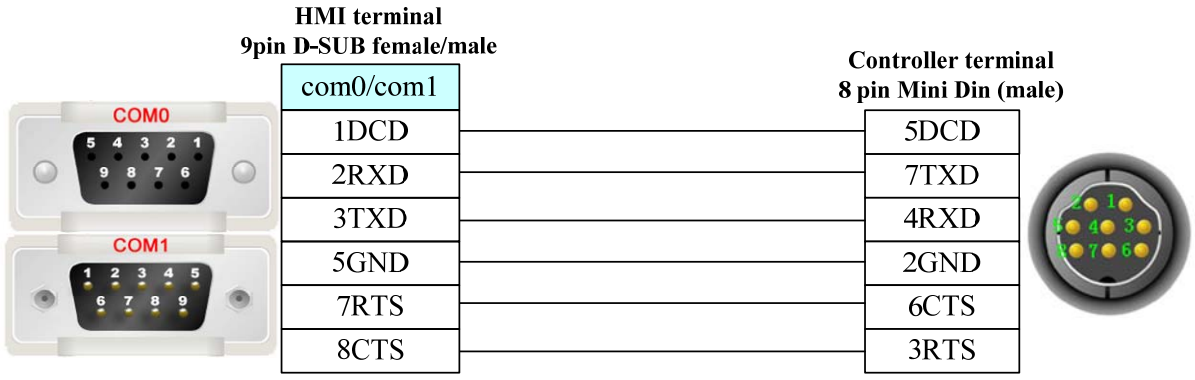
**Note:** 1. FFF: the file number; DDD: the variable address. The correct format example as follow: Bf:n 113087.12, file number 113, variable address 87.12; Ff:n 9002, file number 9, variable address 2. Variable is less than three addresses, the need to fill the former 0.

2. Users can define the File Number.

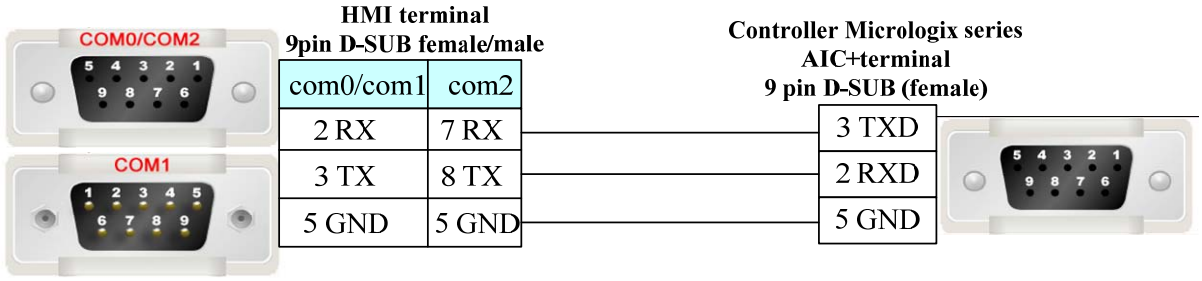
## Cable Diagram

### MicroLogix 1200 RS232 cable diagram

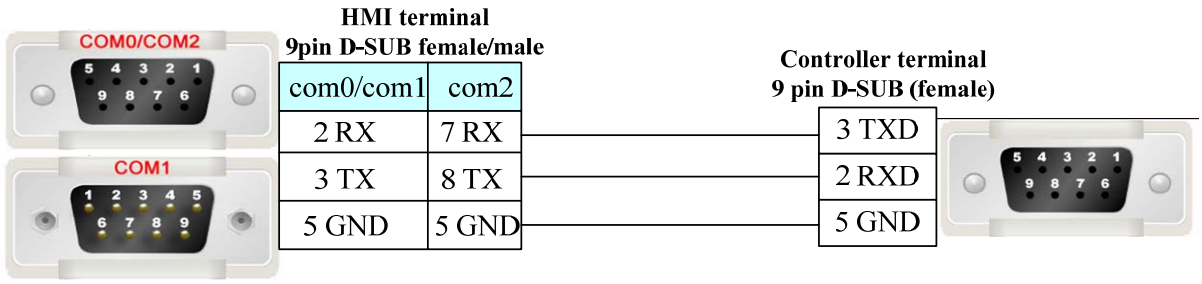
1. Cable made by AB Corporation



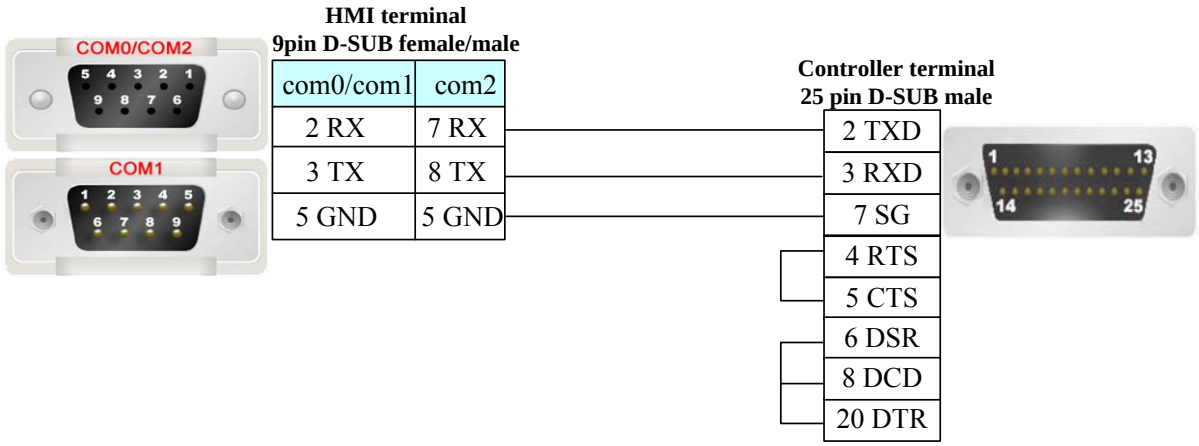

2. Communication module AIC+ (Part No. 1761-NET-AIC) RS232



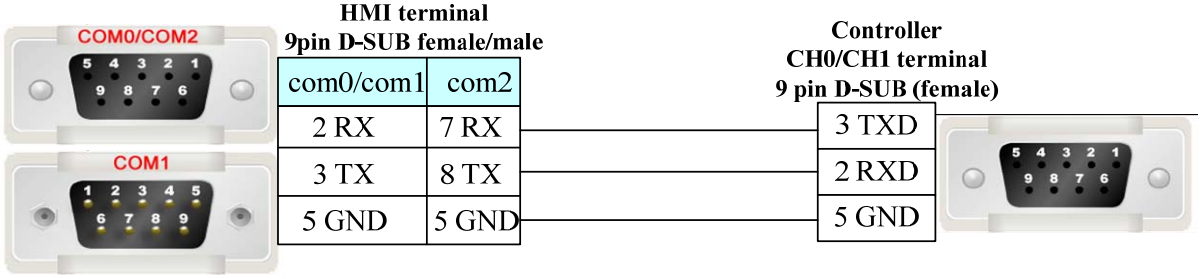

## SLC 5/03 RS232 cable diagram




## PLC-5 RS232 cable diagram



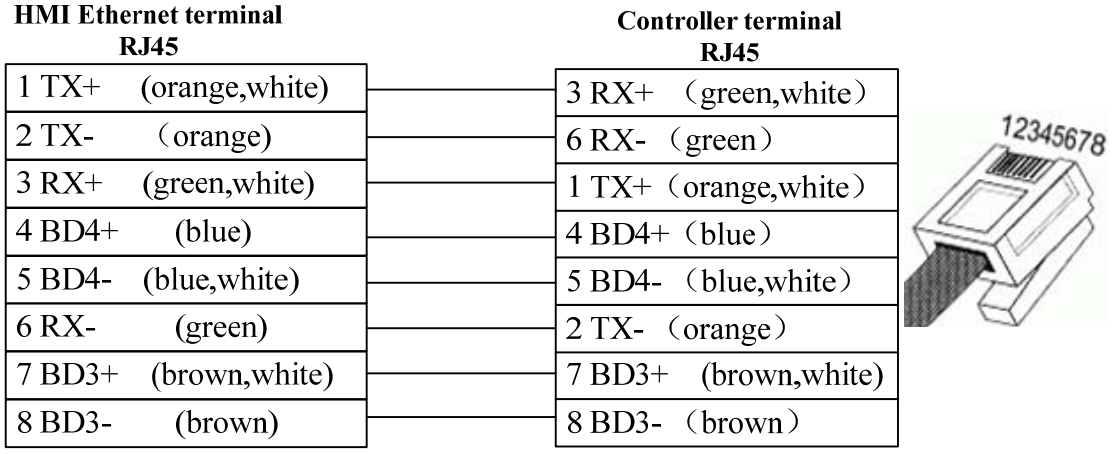

## CompactLogix/ ControlLogix RS232 cable diagram



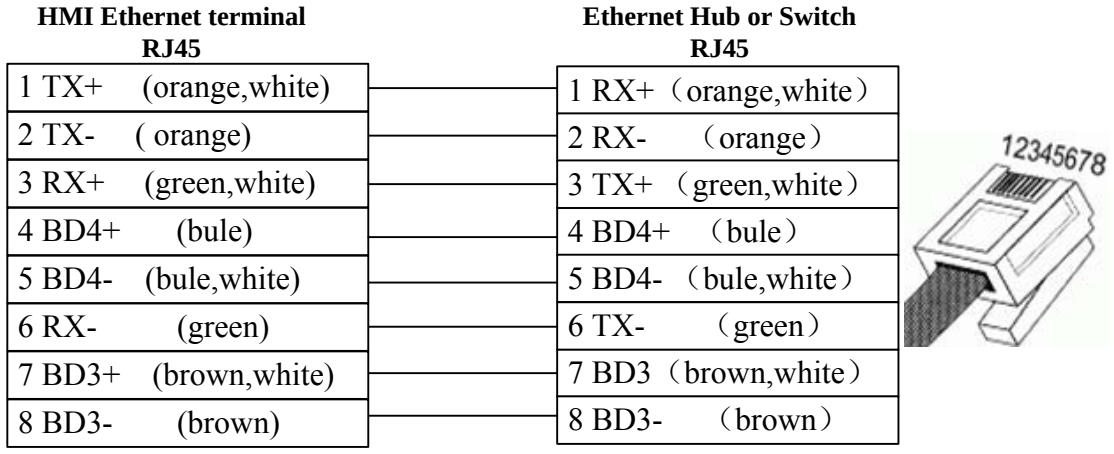

### EtherNet cable

Connecting PC and HMI use cross-ruling; communicating with hub or switch use Cross-over cable or cross-ruling.

a. cross-ruling cable diagram:




b. cross-over cable cable diagram:




## 6.3 ACS-Tech80 Motion Controller

### Serial Communication

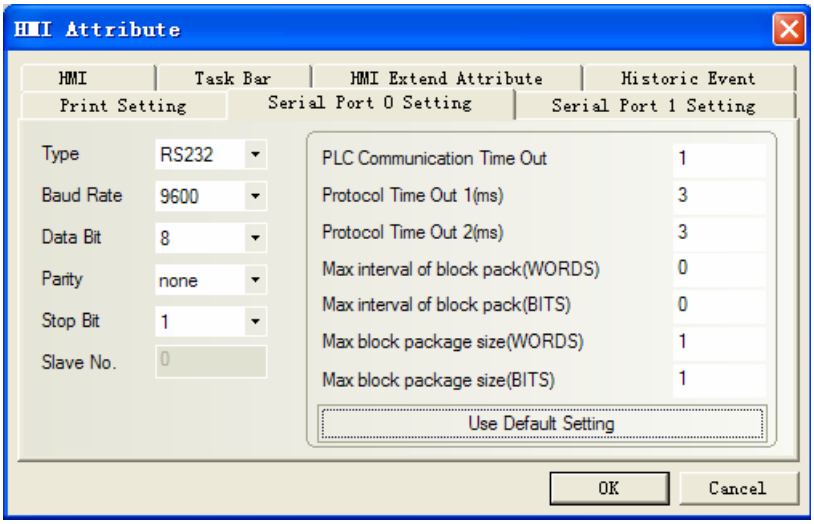
| Series | CPU | Link Module | Driver |
|---|---|---|---|
| SA2103 | SB214SA | RS232 on the CPU unit | ACS-Tech80 |

## System configuration

| Series | CPU | Link Module | COM Type | Parameter | Cable |
|---|---|---|---|---|---|
| SA2103 | SB214SA | RS232 on the CPU unit | RS232 | Setting | Your owner cable |

## Communication Setting

### RS232 communication




## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Linear Deceleration（LD） | ------ | LD 0~3 | D | R/W |
| Linear Acceleration(LA) | ------ | LA 0~3 | D | R/W |
| Linear Velocity(LV) | ------ | LV 0~3 | D | R/W |
| Next trgt Abs Pos(AP) | ------ | AP 0~3 | D | R/W |
| Next Motion Mode(MM) | ------ | MM 0~3 | D | R/W |
| Functions Avail.(FA.1) | ------ | FA.1 0~3 | D | Read Only |
| Array Offset(AO) | ------ | AO 0~3 | D | R/W |
| Array’s Upper Index(UI) | ------ | UI 0~3 | D | R/W |
| Array’s Low Index(LI) | ------ | LI 0~3 | D | R/W |
| Path Gen.mode(PG) | ------ | PG 0~3 | D | R/W |
| Motor enabled(MO) | MO 0~3 | ------ | D | Write Only |
| CLEAR | CLEAR 0 | ------ | D | Write Only |
| RESET | RESET 0 | ------ | D | Write Only |
| B | B 0~3 | ------ | D | Write Only |

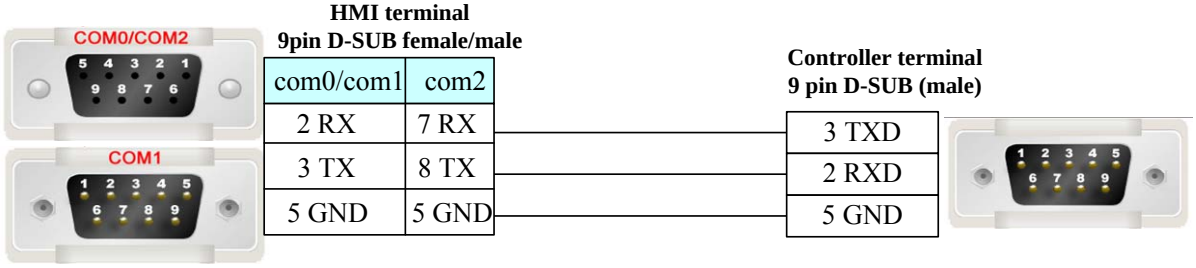
**Note**：R: Readable，W: Writable。

**Register instructions**：

1. LD、LA、LV、AP、MM、FA.1、AO、UI、LI、PG
   Main address：Axis parameter number（X、Y、Z、T）
2. MO、B（Operating instructions）
   Main address：Axis parameter number（X、Y、Z、T）
3. CLEAR、RESET（Operating instructions）

## Cable Diagram

### RS232 communication cable




# 6.4 ADAM

## Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| ADAM | ADAM-4017 | RS485 on the CPU unit | ADAM-4017 |
| | ADMA-4015 | RS485 on the CPU unit | ADMA-4015 |

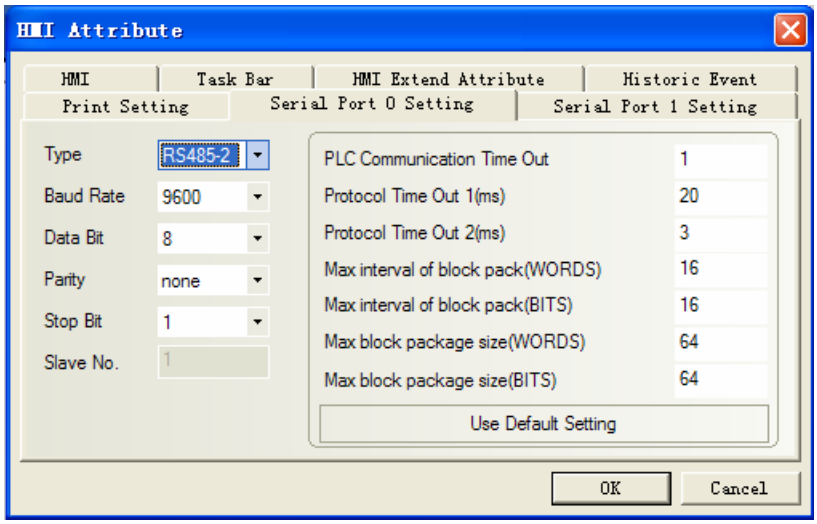
## System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| ADAM | ADAM-4017 | RS485on the CPU unit | RS485 | Setting | Your owner cable |
| | ADMA-4015 | RS485 on the CPU unit | RS485 | Setting | Your owner cable |

## Communication Setting

### HMI

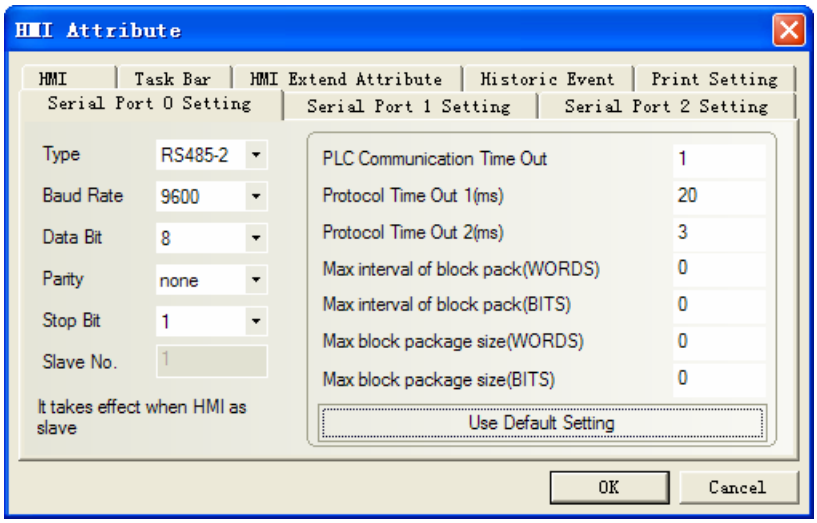
**ADAM-4017** default communication: 9600, 8, none, 1; station: 255




**Note：** a. To allow the “Check Code”;

b. Direct online simulation disables.

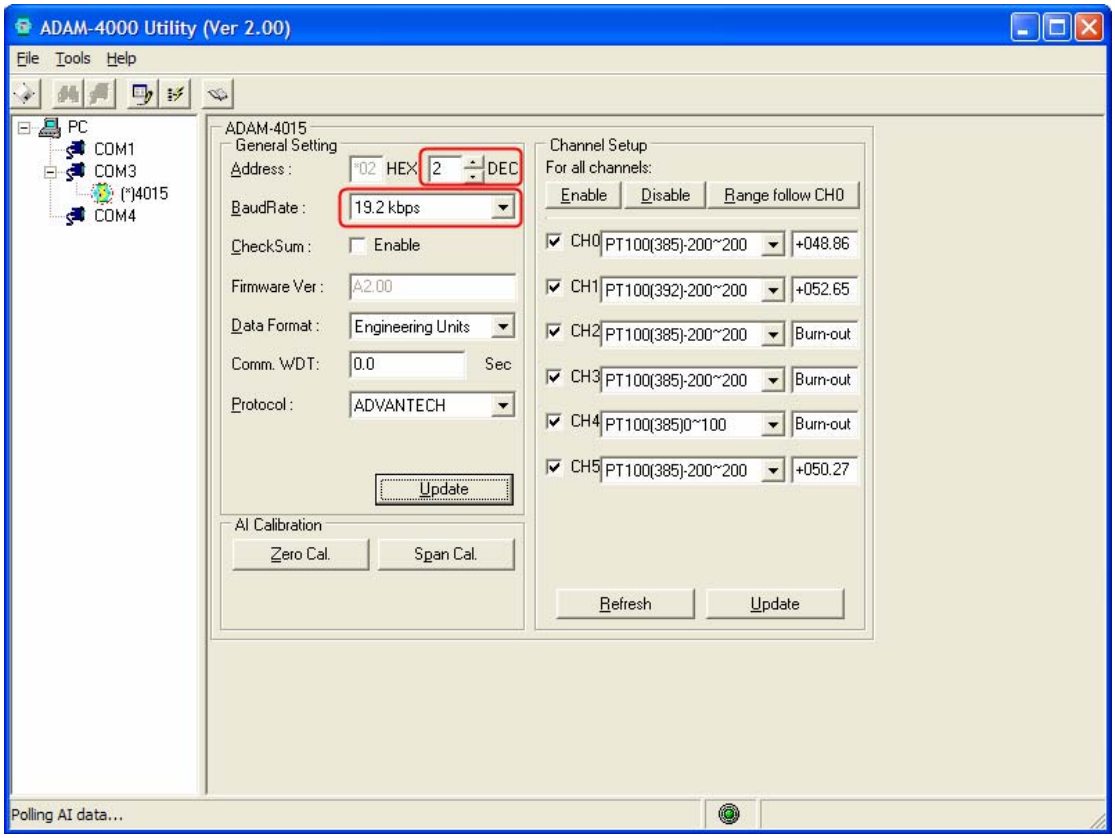
**ADAM-4015** default communication: 9600, 8, none, 1; station: 1




Note: PLC station must match with the ADAM-4015 configuration.

## PLC

Connect “INIT” with “GND”, and reset the device, then set the communication of ADMA-4015.




Set OK, then Update.

# Supported Device

## ADAM-4017

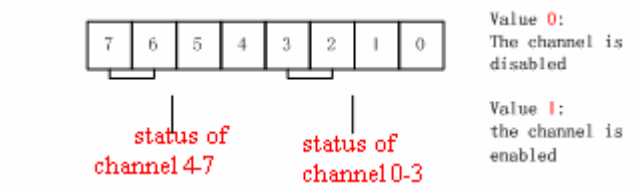
| Device | Bit Address | Word Address | Format |
|---|---|---|---|
| Read Analog Input form Channel N | ——— | S_Channel 0-65535 | DDDDD |
| Read Analog Input from all Channel | ——— | A_Channel 0-7 | D |
| Configuration Status | ——— | Status 0-65535 | DDDDD |
| Enable/disable Channels for Multiplexing | ——— | M_channel 0-65535 | DDDDD |
| Read Channel Status | ——— | Channel_Status 0-65535 | DDDDD |
| Read Version | ——— | Version 0-65535 | DDDDD |
| Read Module Name | ——— | Name 0-65535 | DDDDD |

**Note：** Order code refer to the ADAM-4107 manual

1、 “Data type” of S_Channel and A_Channel is signed integer. Decimal digits is 2 when the power supply is 500mv or 150mv, other conditions is 3.

2、 “Data type” of other registers is HEXING

3、M_channel（$AA5VV）：At the same time allow multiplexing.
Enter the decimal value in the range of 0 to 255, mapping hexadecimal (00-FF)




255（FF）：0-7 channel show.

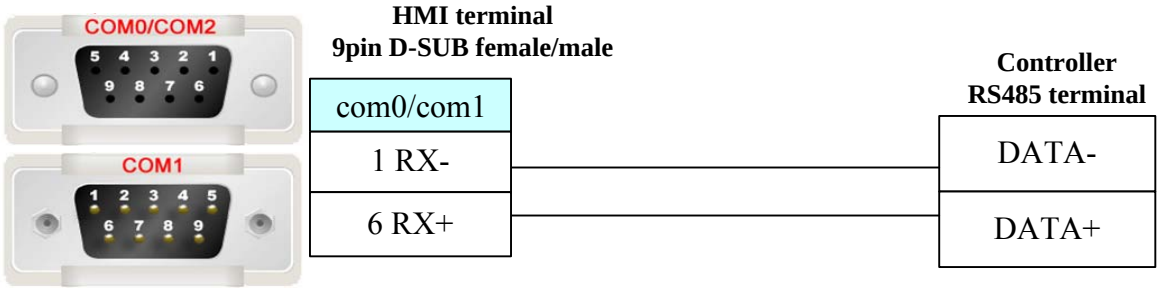
127（7F）：0-6 channel show, 7 Channel does not show.

**ADAM-4015**

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Channel | ------ | Channel 0-5 | D | Floating |

**Note:** Channel 0-5 data type is floating.

## Cable Diagram




# 6.5 AysjNet

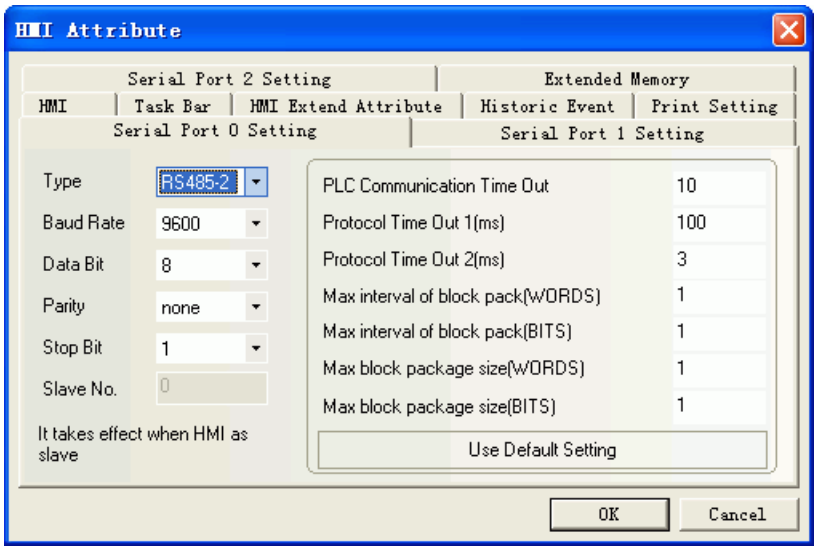
## Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| Compressor Controller | KYK3-K | RS485 on port | AysjNet |

## System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| Compressor Controller | KYK3-K | RS485 on port | RS485 | Setting | Your owner cable |

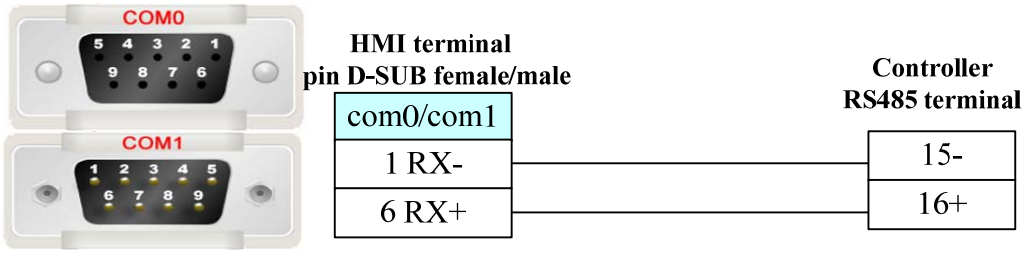
## Communication Setting




## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| control | CTL （0~5）&128&150 | ------ | DDD | Write only |
| set | ------ | SET (0~51)&128 | DDD | |
| state | ------ | STATUS 0.0~17.2 | DD.D | Read only |

## Cable Diagram




# 6.6 Baldor NextMove ES (Motion Controller)

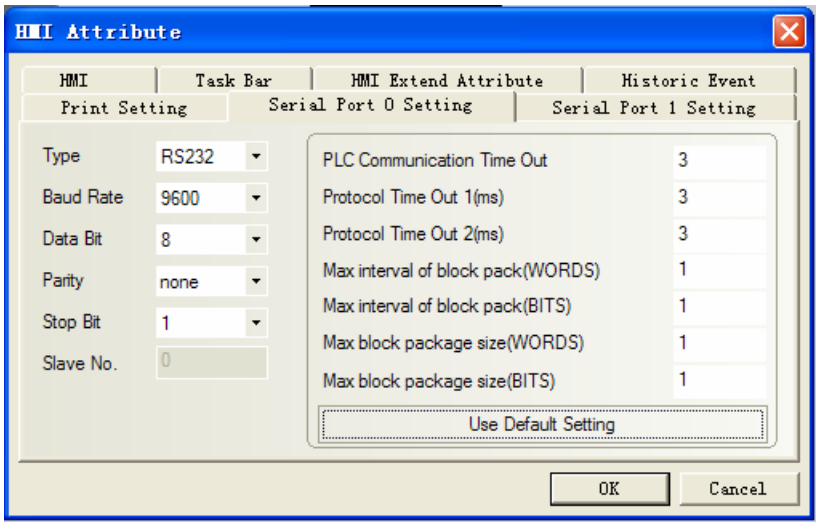
## Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| NextMove ES | NextMove ES | RS232 on the CPU unit | Baldor NextMove ES |

## System configuration

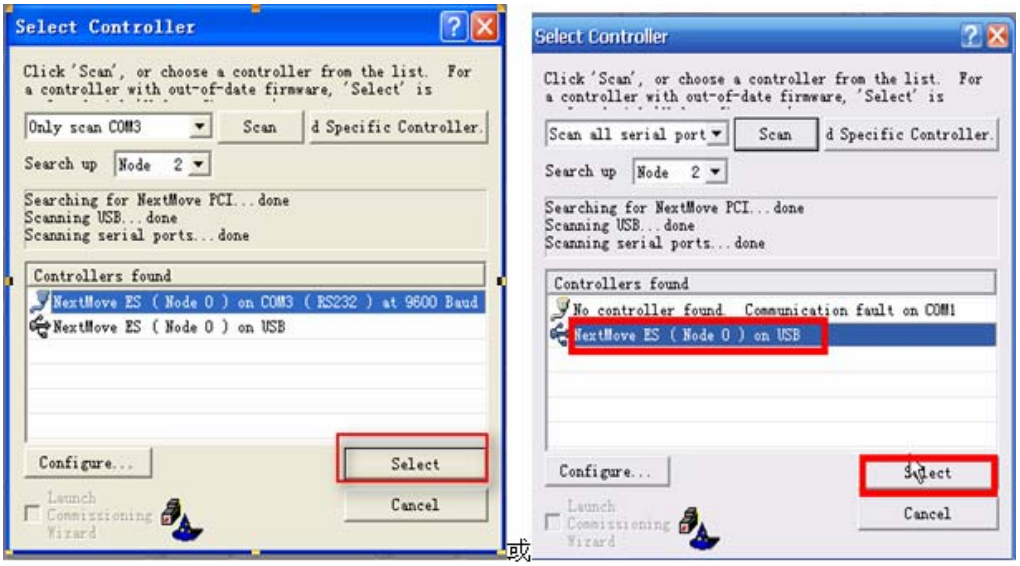
| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| NextMove ES | NextMove ES | RS232 on the CPU unit | RS232 | Setting | Your owner cable |

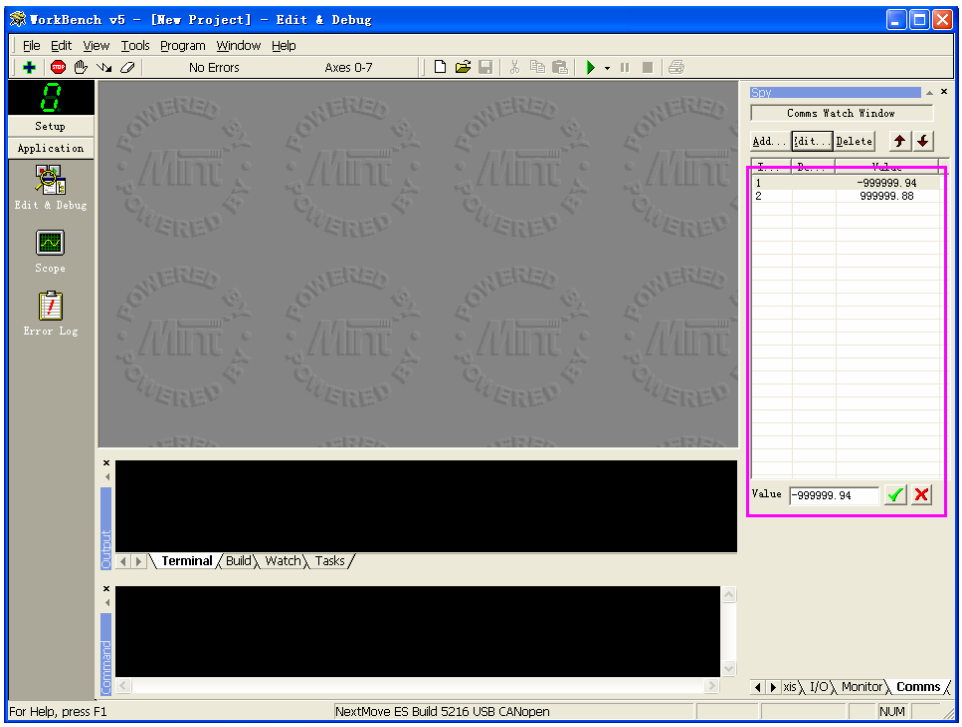
# Communication Setting




# PLC software setting

## Use the guide of the Workbench software


Select Controller
Click 'Scan', or choose a controller from the list. For a controller with out-of-date firmware, 'Select' is
Only scan COM3
Scan all serial port
Scan
d Specific Controller.
Search up
Node 2
Searching for NextMove PCI...done
Scanning USB...done
Scanning serial ports...done
Controllers found
NextMove ES ( Node 0 ) on COM3 ( RS232 ) at 9600 Baud
NextMove ES ( Node 0 ) on USB
No controller found. Communication fault on COM1
Configure...
Select
Cancel
Launch Commissioning Wizard



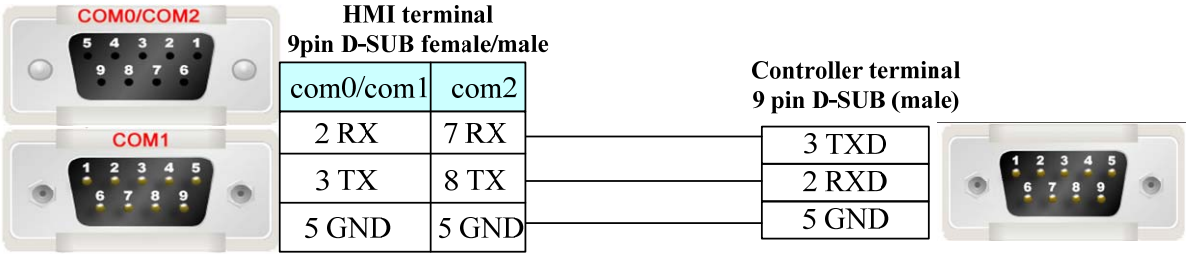

## Supported Device

（Only data of comms can be monitored, some address greater than or equal to 100 are read only. Please pay attention to matching the controller software configuration.）

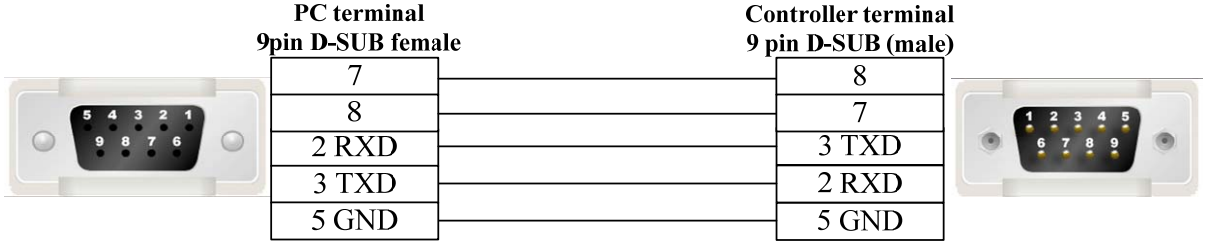
| Device | Bit Address | Word Address（Parameter symbol） | Format | Notes |
|---|---|---|---|---|
| Float | --------- | 1-255 | DDD | Float Data type |

## Cable Diagram

### RS232 communication cable of HMI connecting to controller




### RS232 programming cable（Also can use USB，Power is +5v/±12v）



## 6.7 Barcode

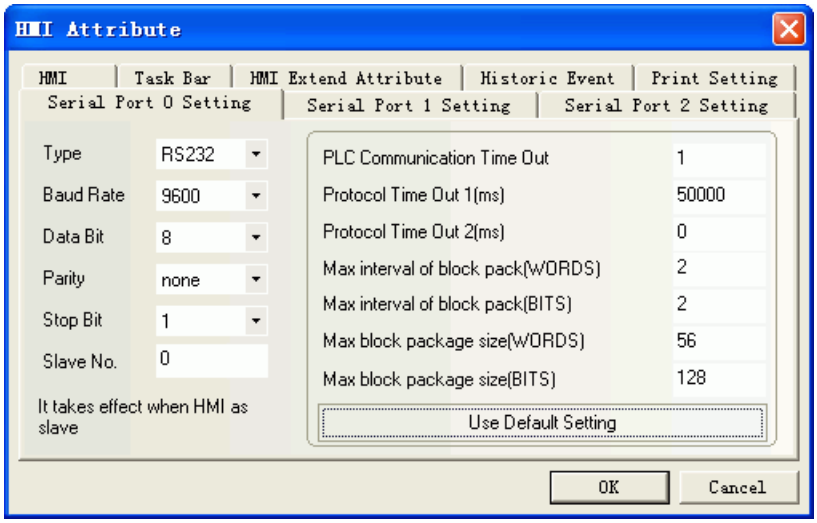
### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| Barcode | 3800LTP-12E | RS232 | Barcode |
| | MLJ-MS9590 | | |
| | SYMBOL LS4208-SR200007 ZZR | | |
| | Flashcode LS3042 | | |

### System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| Barcode | 3800LTP-12E | RS232 | RS232 | Setting | Your owner cable |
| | MLJ-MS9590 | | | | |
| | SYMBOL LS4208-SR200007 ZZR | | | | |
| | Flashcode LS3042 | | | | |

### Communication Setting




### Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Word | -------- | LW 8900-8999 | DDDD | |
| Bit | -------- | LB 8999 | DDDD | |

**Note:** 1. LW 8900-8999: the character after scanning, text and note book parts can display it.
2. LB 8999: the state of barcode is received or not. LB 8999=1 means the data is received.

## Cable Diagram

Connect the scanner and the COM port of HMI directly.

# 6.8 Baumuller

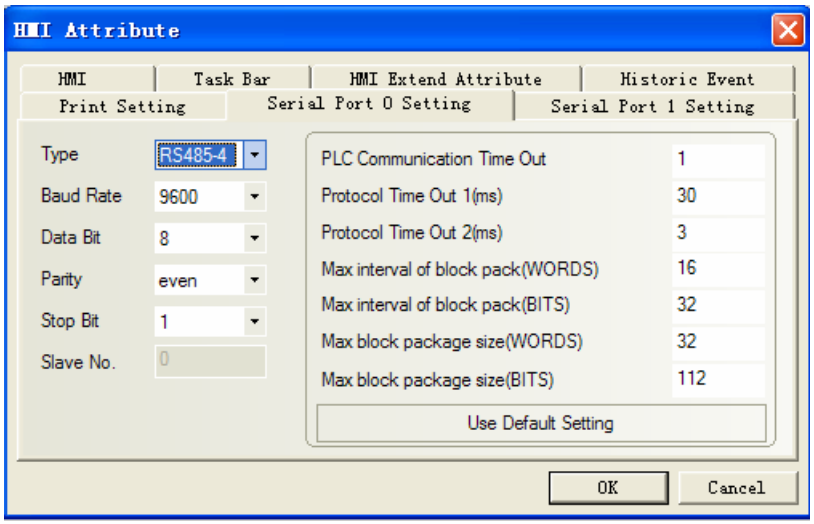
## Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| Baumuller | BM4413-ST0-02200-03 | RS422 on the CPU unit | Baumuller |

## System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| Baumuller | BM4413-ST0-02200-03 | RS422 on the CPU unit | RS485 | Setting | Your owner cable |

## Communication Setting




## Supported Device

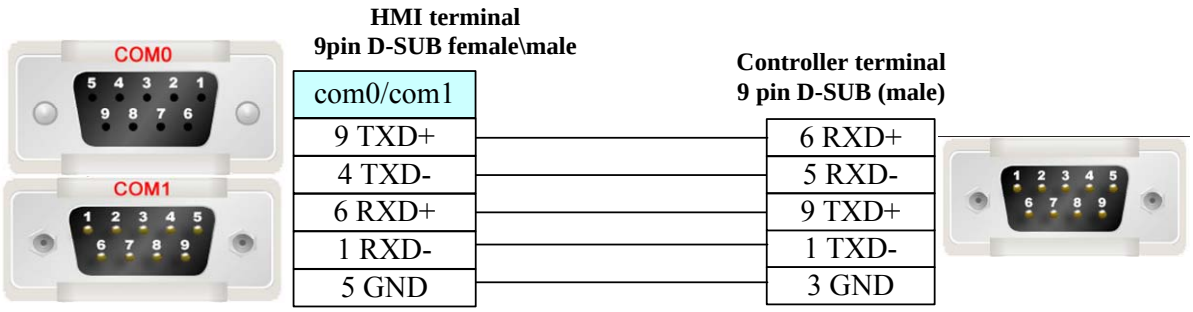
| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Bit type | DB_BIT0. 00-255. F | ------ | DDD.H | |
| Word type | ------ | DB0-255 | DDD | |

**Example:** DB2_BIT address please input 0.F in the Kinco HMIware software.

DB2 address please input 11 in the Kinco HMIware software.

## Cable Diagram

### RS485-4 communication cable




# 6.9 Bosch Rexroth KVFC+ (Inverter)

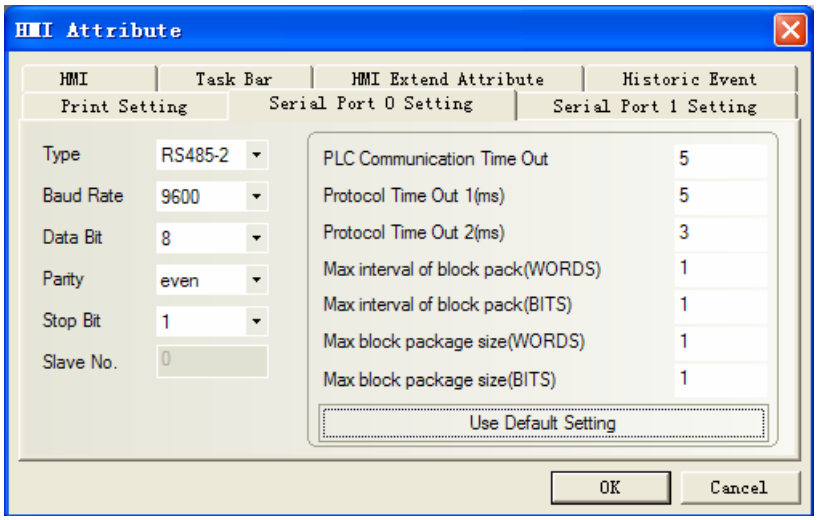
## Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| KVFC+ | | RS485 | Bosch Rexroth KVFC+ |

## System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| KVFC+ | | RS485 on the CPU unit | RS485 | Setting | Your owner cable |

## Communication Setting

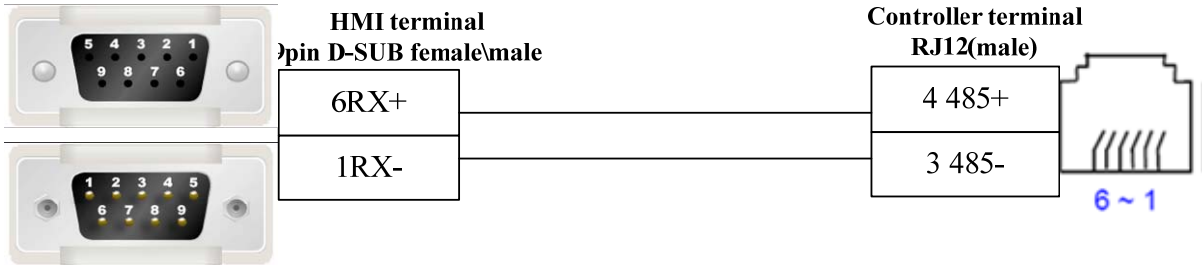



## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Start/Stop | STW0~3 | ------ | D | STW0 open, start.<br>STW0 close, stop.<br>STW1 close, positive rotation.<br>STW1 open, negative rotation.<br>STW2 REV inching turning.<br>STW3 FWD inching turning. |
| Set frequency | ------ | HSW 0 | D | |
| Basic Function Block | ------ | B 0~41 | DD | B16 acceleration time.<br>B17 deceleration time. |
| Deviation alarm | ------ | E 0~41 | DD | |
| Programmable control function array | ------ | P 0~37 | DD | |
| High function array | ------ | H 0~38 | DD | |
| D array | ------ | D 0~6 | D | D0: output power.<br>D2: running current. |

## Cable Diagram




# 6.10 Bosch Rexroth

## Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| PPC-R | PPC-R22.1 13VRS | RS232 on the CPU unit | Bosch Rexroth |
| | | RS485 on the port | |
| L | L40 | RS232 on the CPU unit | |
| | L20 | RS232 on the CPU unit | |

## System configuration

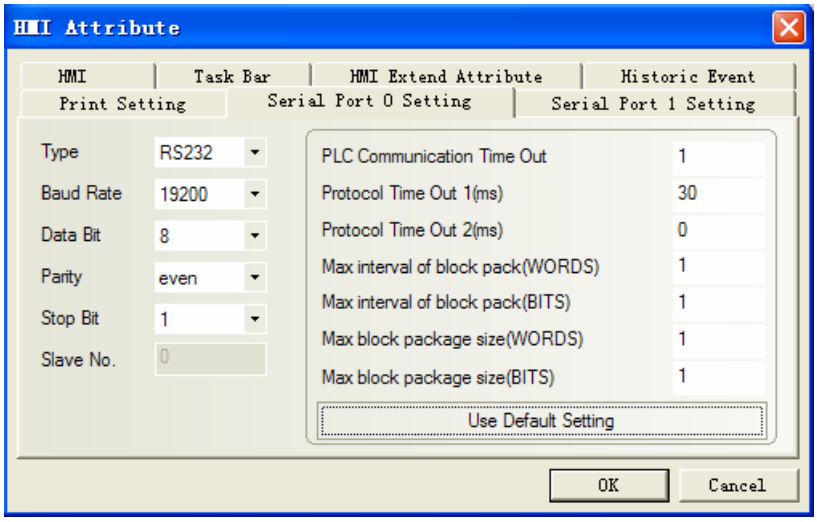
| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| PPC-R | PPC-R22.1 13VRS | RS232 on the CPU unit | RS232C | Setting | Your owner cable |
| | | RS485 on the port | RS485 | Setting | Your owner cable |
| L | L40 | RS232 on the CPU unit | RS232C | Setting | Your owner cable |

| | | | | | |
|---|---|---|---|---|---|
| | L20 | | | | |

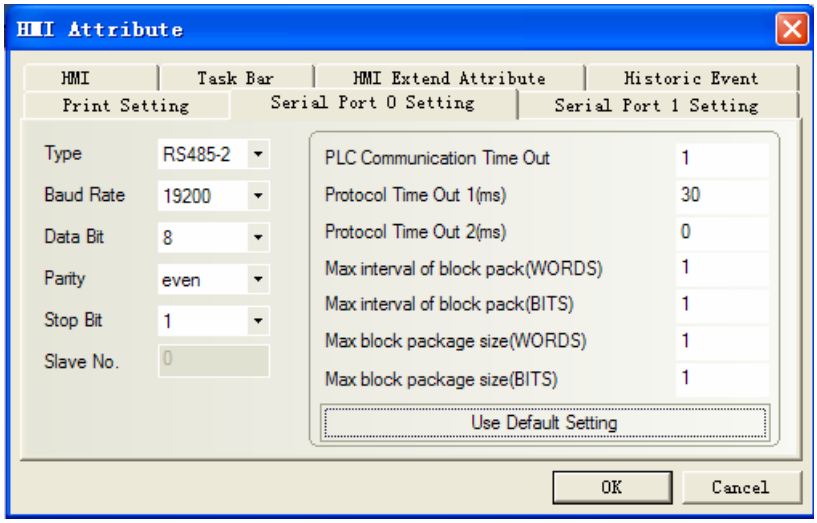
## Communication Setting

### PPC-R communication setting

RS232 communication: 19200, 8, even, 1; station number: 128



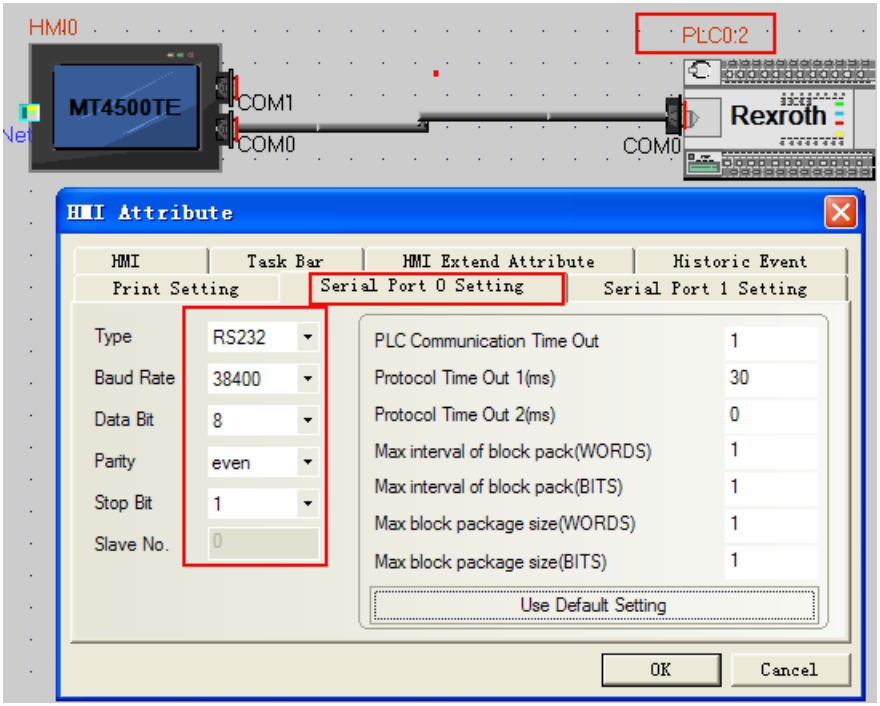

RS485 communication




**Note:** To communicate with the touch screen, declare variable firstly in the Rexroth software.

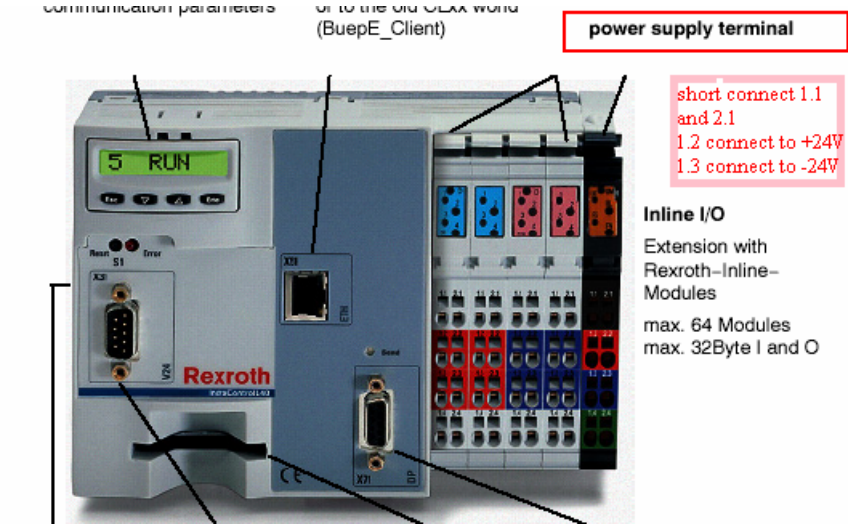
### L40 communication settings

Default communication: 38400, 8, 1, none; Station No.: 2




**Note:** To communicate with the touch screen, declare variable firstly in the Rexroth software.

## L40 Hardware Settings

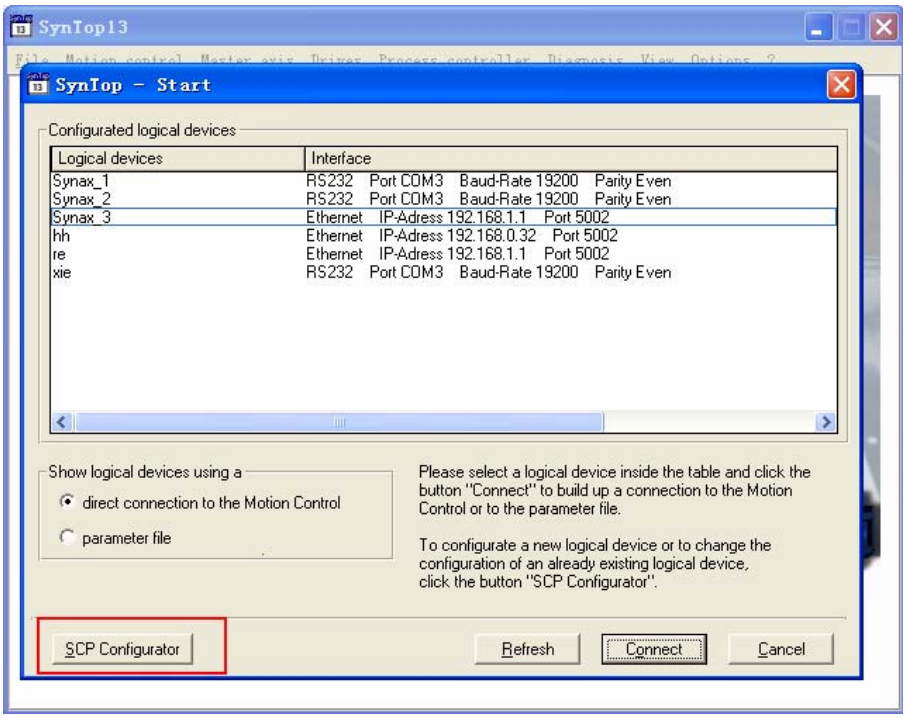



# PLC Software Settings

## PPC-R software setting

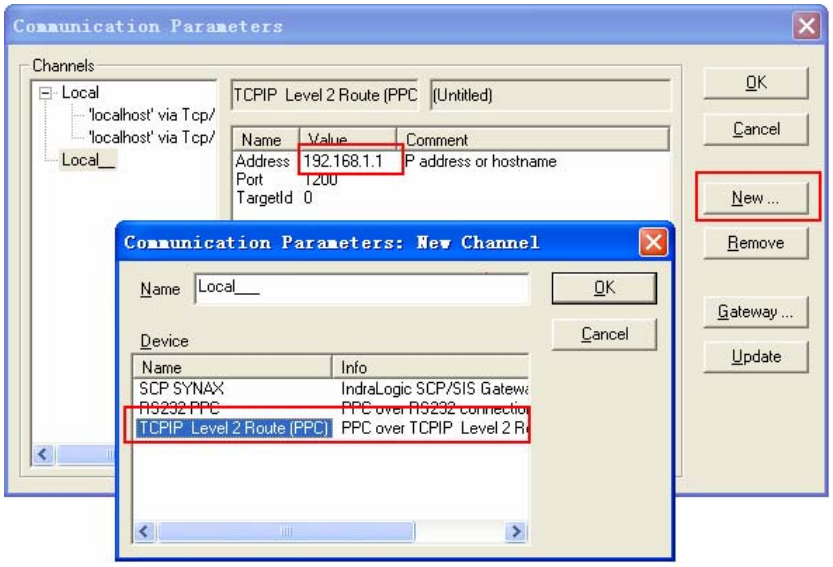
PLC connects with PC via crossover ethernet cable. If using cross-connection ethernet cable, you must add a HUB (we usually use a cross-connection line to access the Internet)

Hardware configuration：

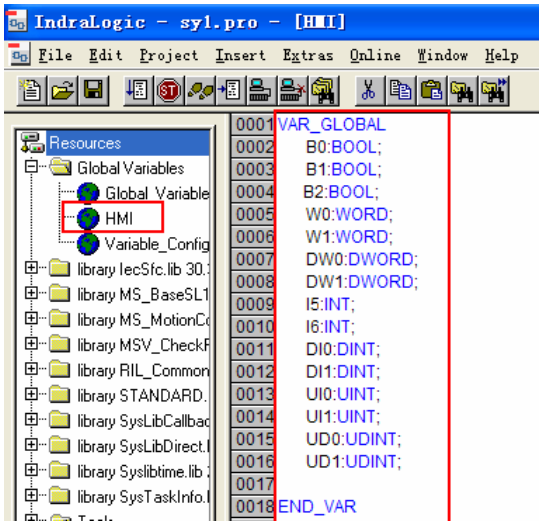

SynTop13
SynTop - Start
Configurated logical devices
Logical devices
Interface
Synax_1 RS232 Port COM3 Baud-Rate 19200 Parity Even
Synax_2 RS232 Port COM3 Baud-Rate 19200 Parity Even
Synax_3 Ethernet IP-Adress 192.168.1.1 Port 5002
hh Ethernet IP-Adress 192.168.0.32 Port 5002
re Ethernet IP-Adress 192.168.1.1 Port 5002
xie RS232 Port COM3 Baud-Rate 19200 Parity Even
Show logical devices using a
direct connection to the Motion Control
parameter file
Please select a logical device inside the table and click the button "Connect" to build up a connection to the Motion Control or to the parameter file.
To configurate a new logical device or to change the configuration of an already existing logical device, click the button "SCP Configurator".
SCP Configurator
Refresh
Connect
Cancel

1. Click”scp configurator”--->”scanning ”or” add device”--->”next”, pay attention to the default controller IP: 192.168.1.1. And set IP 192.168.1.1 in the software (**PC and controller must be set up in the same segment**), ping IP address is OK, that configuration is successful. Save and close “scp configurator”--->”refresh” to see logical devices created in configured logical devices”, double-click to enter. All configurations will be successful.

2. Open ”indralogic”--->”**online/communication parameter**”--->”new” and select ”TCP/IP” to modify “value”, set IP address the same as controller: 192.168.1.1




3. “Resource”--->“Global variables”--->declare variable in “HMI”

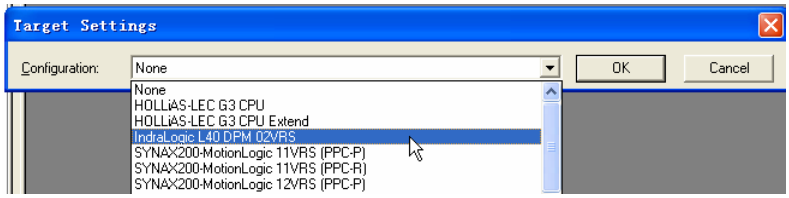



4. Click “online/login”

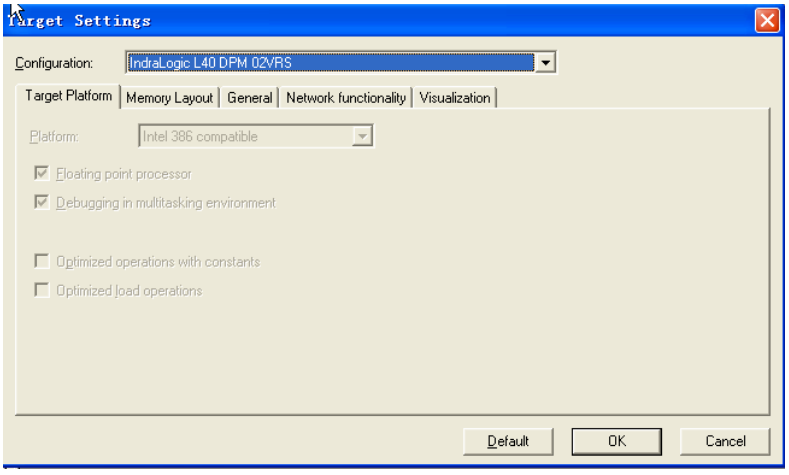
## L40 software setting

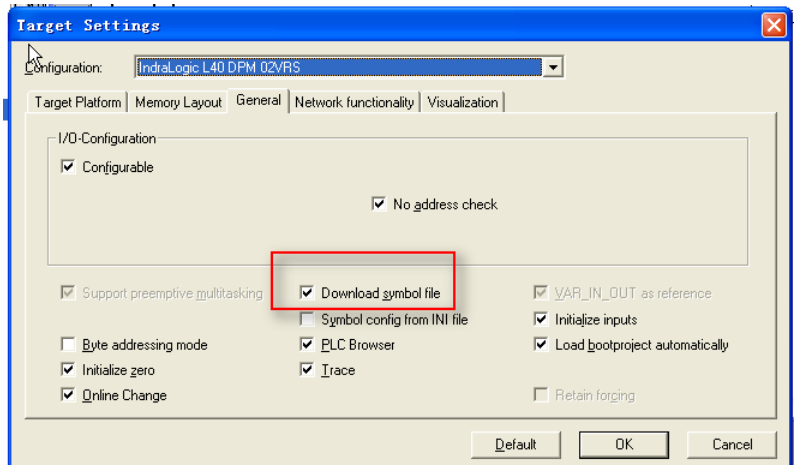
1) The IndraLogic software connect with the Rexroth IndraControl L40 by ethernet cable（test: plc IP address：192.168.100.103）

Open the IndraLogic software，create a new project：



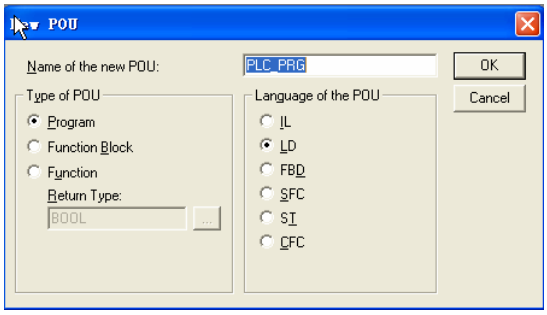

Click “OK” and pop-up the window as follows:



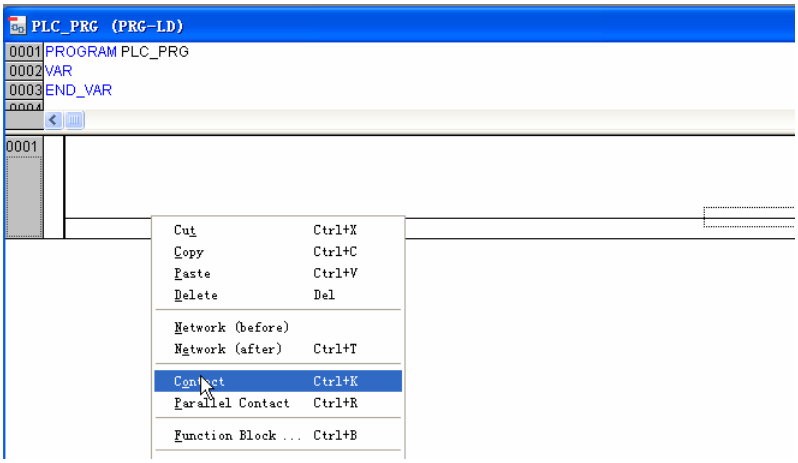



**Note：** Must select Download symbol file

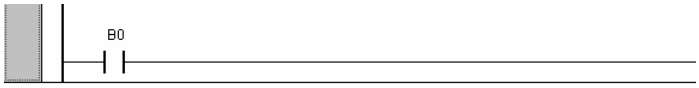
Click “OK” and pop-up the window as follows:

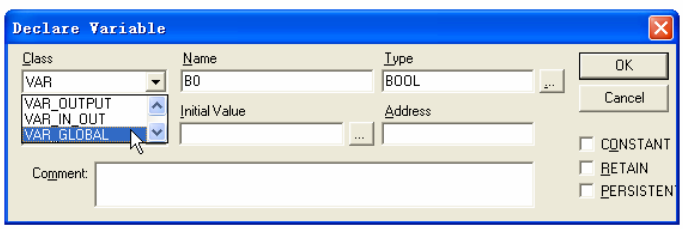



And then edit program：

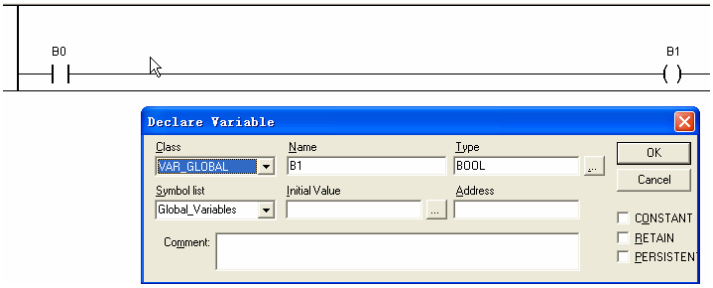



Input B0 and pop-up the dialog, configurations as follows, click “OK”:

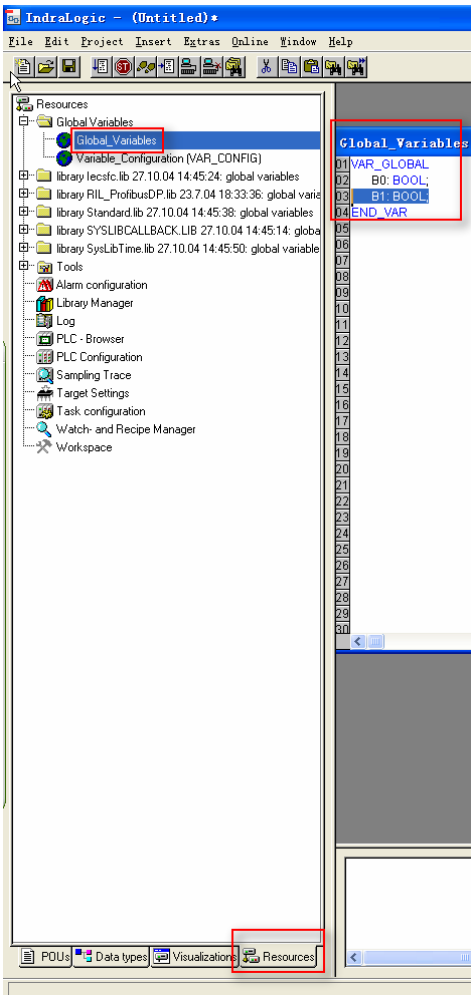


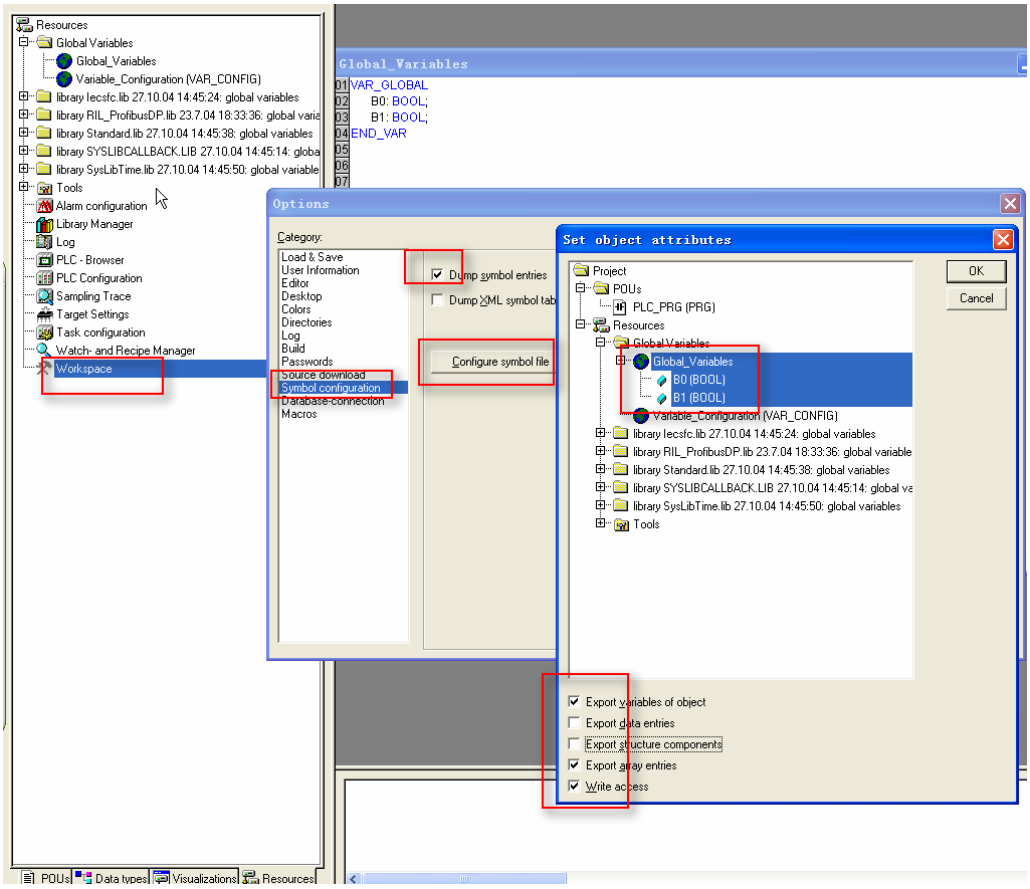
And set up coil：



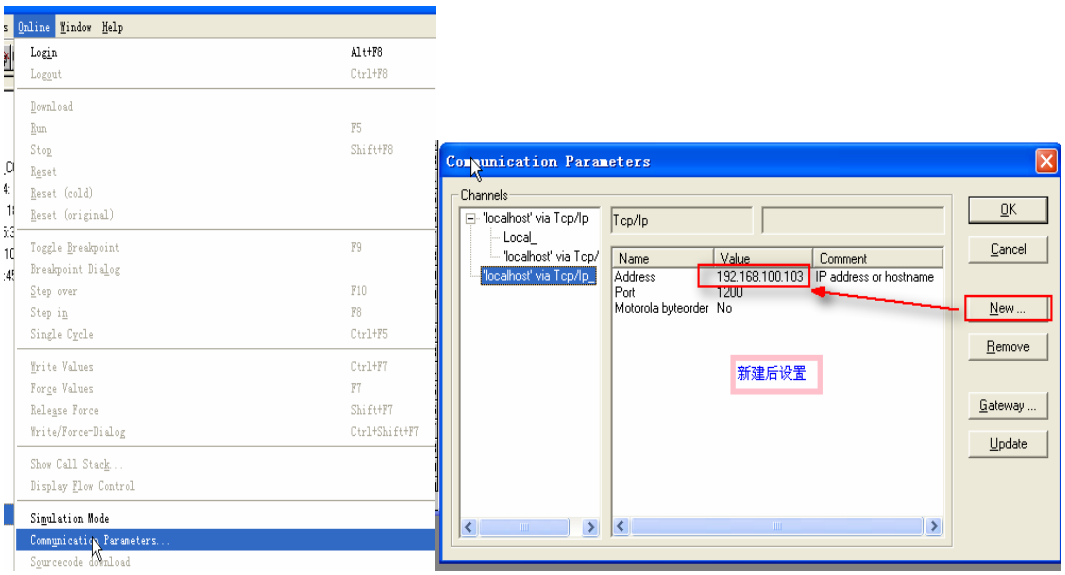

At the same time, you will find that there automatically generate two variables in the global variable：



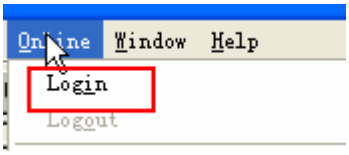

Then setting as follows：



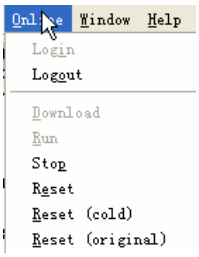

Setting communication parameter:

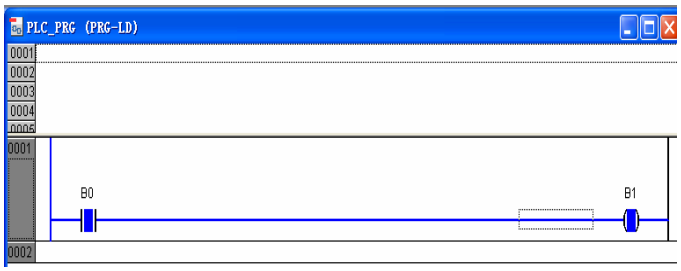



Then click “Login”:




Communicating successfully, you can operate（“Online” menu to select “run” or others）:




**Note：** The PLC panel must be set up, press" Enter", then press"△", until showed up " RS232", and then press "Enter" to enter "COM SERV" interfaces (not SERV, it must change to SERV)

In accordance with the above settings, the serial line access, Kinco HMIware can be communicated with the Rexroth Controller L40 by serial port.

## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| BYTE | B0000-9999 | ------ | DDDD | |
| WORD | ------ | W0-65535 | DDDDD | |
| INT | ------ | I0-65535 | DDDDD | |
| UINT | ------ | UI0-65535 | DDDDD | |
| DWORD | ------ | DW0-65535 | DDDDD | |
| DINT | ------ | DI0-65535 | DDDDD | |
| UDINT | ------ | UD0-65535 | DDDDD | |

## Cable Diagram

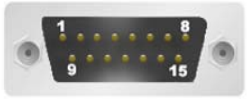
### PPC-R RS232 communication cable

**HMI terminal**
**9pin D-SUB female/male**

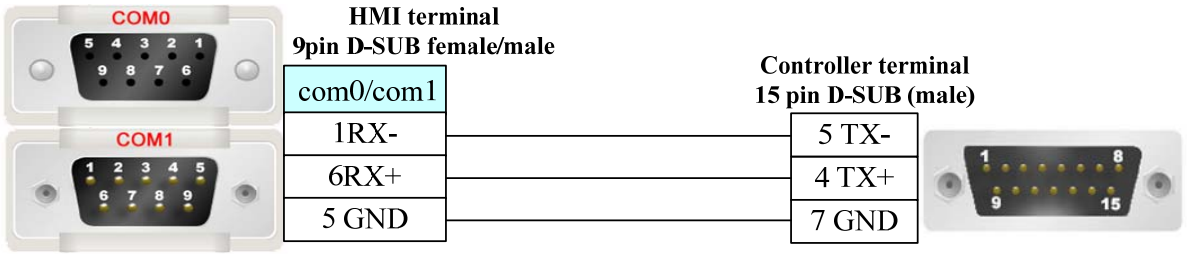
| com0/com1 | com2 |
|---|---|
| 2 RX | 7 RX |
| 3 TX | 8 TX |
| 5 GND | 5 GND |

**Controller terminal**
**15 pin D-SUB (male)**

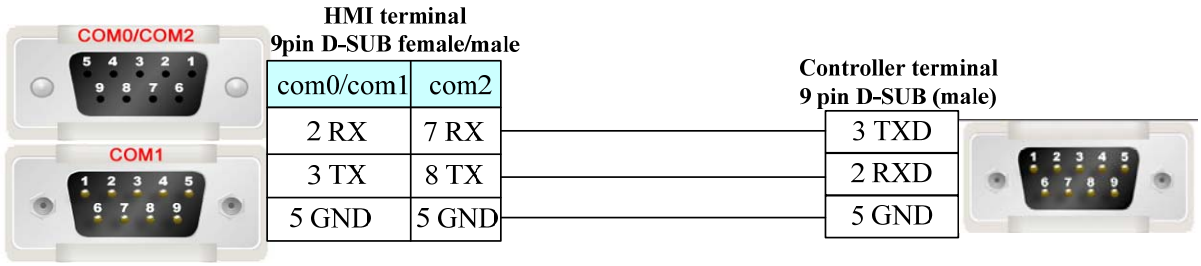
| |
|---|
| 2 TXD |
| 3 RXD |
| 7 GND |




### PPC-R RS485 communication cable




**L40 communication cable**




## 6.11 Bosch Rexroth Ethernet

### Network communication (indirect online and direct online simulation disable)

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| IndraLogic | IndraLogic L40 DPM | ETH on the CPU unit | Bosch Rexroth Ethernet |

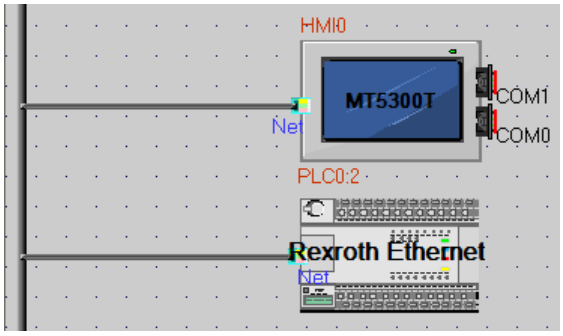
### System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| IndraLogic | L40 DPM 02VRS | ETH on the CPU unit | ETH | Setting | Your owner cable |

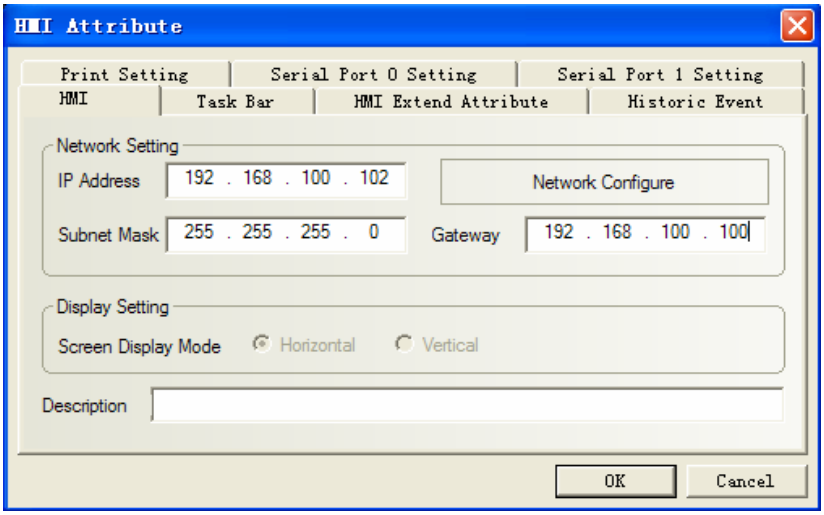
### Communication Setting

**Network communication**

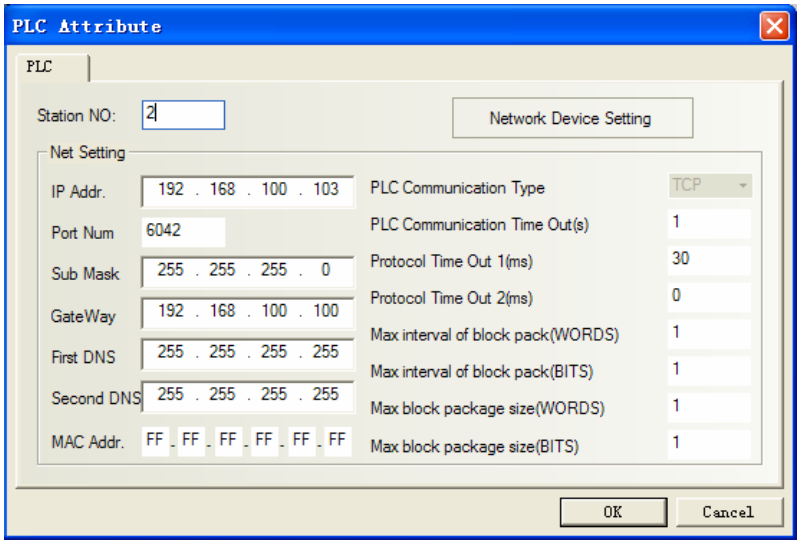
**※Project construction**



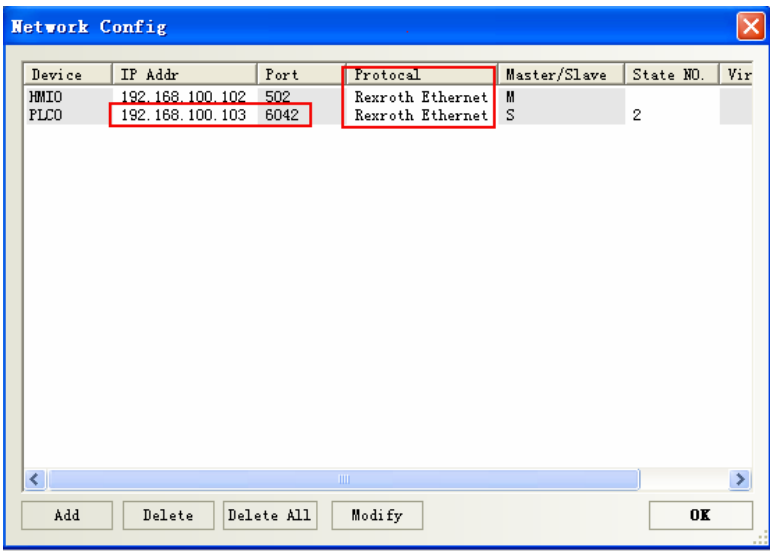

**※HMI Attribute**




## ※PLC Attribute (station disable)




**※Network configuration（Note:** PLC port num. must be set 6042，HMI port num. is optional，default is 6042. In addition, the screen and plc must be set in the same network segment, the gateway of the screen is better to set with the actual use of the network gateway .）

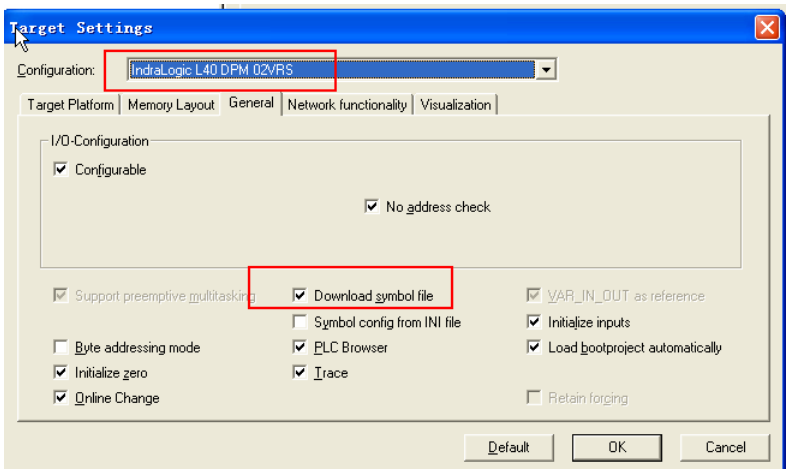


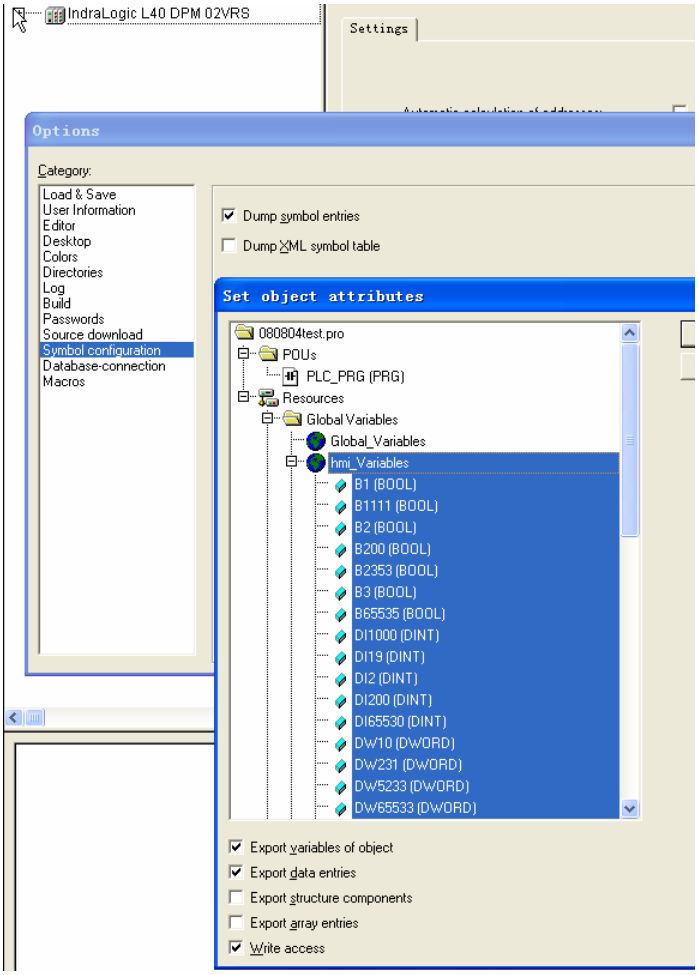
**Note:** To communicate with the touch screen, declare variable firstly in the Rexroth software.

## PLC software setting

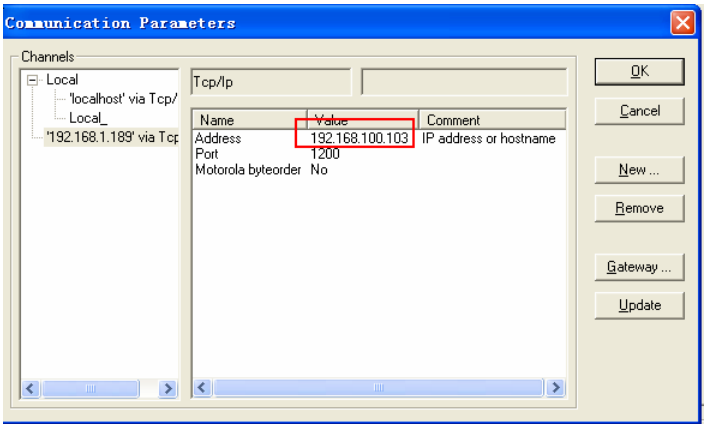
PLC connect with PC by crossover network cable，if using cross-connection network cable, you must add a HUB (we usually use a cross-connection line to access the Internet)

1. After L40 equipped with software driver successfully, to set as follows:

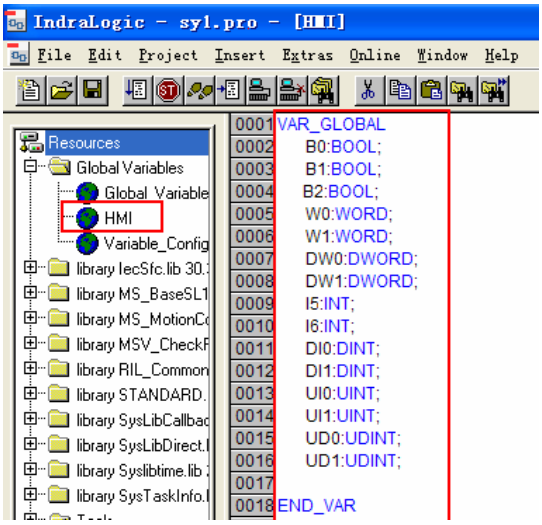



At this time open “indralogic” -->“online/communication parameter” -->“new” and select “TCP/IP ” to modify “value”，set IP address the same as controller: 192.168.100.103




2. “resource”--->“Global variables”--->declare variable in “HMI”




3. Click “online/login”

## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| BYTE | B0000-9999 | ------ | DDDD | |
| WORD | ------ | W0-65535 | DDDDD | |
| INT | ------ | I0-65535 | DDDDD | |
| UINT | ------ | UI0-65535 | DDDDD | |
| DWORD | ------ | DW0-65535 | DDDDD | |
| DINT | ------ | DI0-65535 | DDDDD | |
| UDINT | ------ | UD0-65535 | DDDDD | |

## Cable Diagram

Cross-connection or crossover network cable can be used as communication cable via the hub

a. Cross-connection cable diagram:

| HMI Ethernet terminal RJ45 | Controlle terminal RJ45 |
|---|---|
| 1 TX+ (orange,white) | 3 RX+ （green,white） |
| 2 TX- （orange） | 6 RX- （green） |
| 3 RX+ (green,white) | 1 TX+（orange,white） |
| 4 BD4+ (blue) | 4 BD4+（blue） |
| 5 BD4- (blue,white) | 5 BD4- （blue,white） |
| 6 RX- (green) | 2 TX- （orange） |
| 7 BD3+ (brown,white) | 7 BD3（brown,white） |
| 8 BD3- (brown) | 8 BD3- （brown） |

b. crossover network cable diagram:

| HMI Ethernet terminal RJ45 | Ethernet Hub or Switch RJ45 |
|---|---|
| 1 TX+ (orange,white) | 1 RX+（orange,white） |
| 2 TX- （orange） | 2 RX- （orange） |
| 3 RX+ (green,white) | 3 TX+ （green,white） |
| 4 BD4+ (blue) | 4 BD4+ （blue） |
| 5 BD4- (blue,white) | 5 BD4- （blue,white） |
| 6 RX- (green) | 6 TX- （green） |
| 7 BD3+ (brown,white) | 7 BD3（brown,white） |
| 8 BD3- (brown) | 8 BD3- （brown） |

# 6.12 CANOpen Node Slave

## Serial Communication

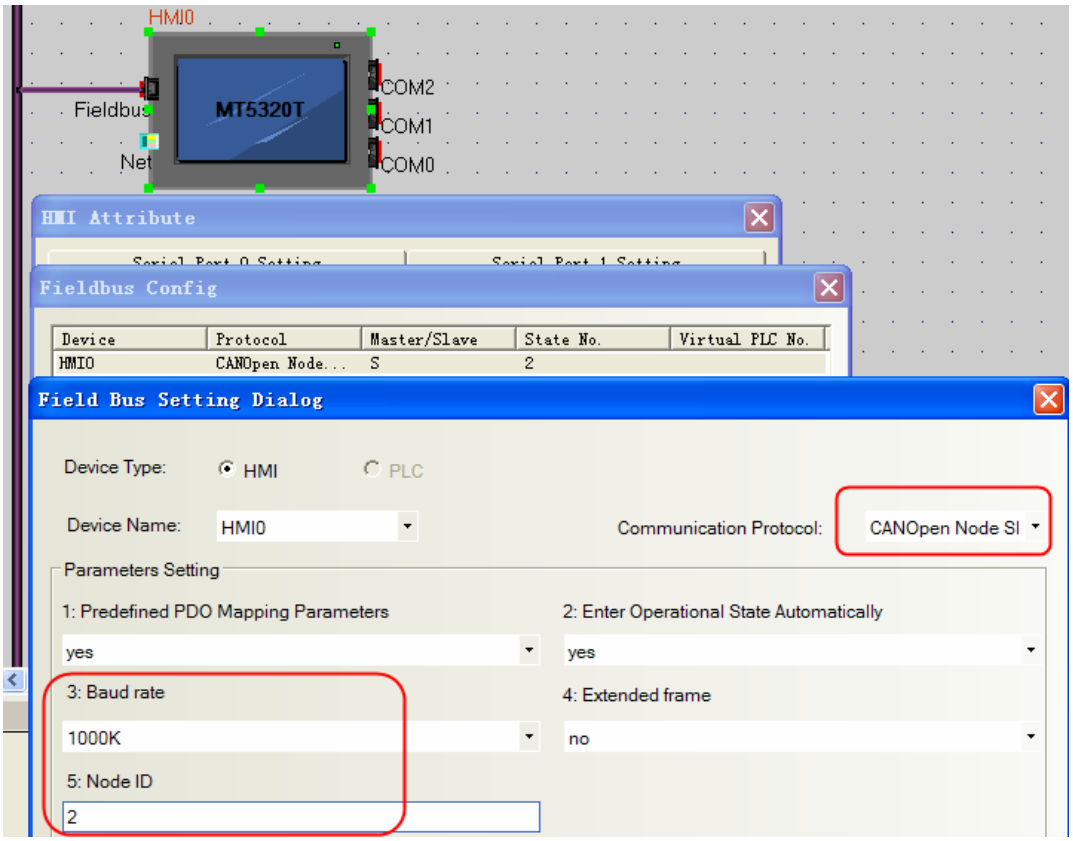
| Series | CPU | Link Module | Driver |
|---|---|---|---|
| KINCO | K4 | CAN port on the External Device | CANOpen Node Slave |
| Other company devices which support CANOpen | | CANOpen port | |

## System configuration

| Series | CPU | Link Module | Parameter | Cable |
|---|---|---|---|---|
| KINCO | K4 | CAN port on the External Device | Setting | Your owner cable |
| Other company devices which support CANOpen | | CAN port | Setting | |

## Communication Setting

## HMI




**Note:** Baud Rate and Station No. must be the same as the setting in the controller.

## Parameters Setting

1. Predefined PDO mapping parameters

a. Default is “yes”, that is an effective predefined PDO mapping parameters. HMI now use the following PDO communication parameters and mapping

**Receive PDO Mapping**

- PDO 0x1400 (Id: $NodeID+0x200)
  - LW8000
  - LW8001
  - LW8002
  - LW8003
- PDO 0x1401 (Id: $NodeID+0x300)
  - LW8004
  - LW8005
  - LW8006
  - LW8007
- PDO 0x1402 (Id: $NodeID+0x400)
  - LW8008
  - LW8009
  - LW8010
  - LW8011
- PDO 0x1403 (Id: $NodeID+0x500)
  - LW8012
  - LW8013
  - LW8014
  - LW8015

**Send PDO Mapping**

- PDO 0x1800 (Id: $NodeID+0x180)
  - LW8016
  - LW8017
  - LW8018
  - LW8019
- PDO 0x1801 (Id: $NodeID+0x280)
  - LW8020
  - LW8021
  - LW8022
  - LW8023
- PDO 0x1802 (Id: $NodeID+0x380)
  - LW8024
  - LW8025
  - LW8026
  - LW8027
- PDO 0x1803 (Id: $NodeID+0x480)
  - LW8028
  - LW8029
  - LW8030
  - LW8031

Note: TX_PDO using the event-triggered mode, that is, only when its mapping variable changes, it sends

the PDO.

b. If the "No", the main station or other equipment necessary to configure the PDO communication parameters and mapping (configure only in the pre-operational status). After configured, you can send a save command via USB-CAN or controller to save the current configuration (restart still valid).

Command:

| | COB-ID | DATA |
|---|---|---|
| Save the configuration information: | 0x600 + NodeID | 0x23 0x10 0x10 0x01 0x73 0x61 0x76 0x65 |
| Restore to factory defaults: | 0x600 + NodeID | 0x23 0x11 0x10 0x01 0x6C 0x6F 0x61 0x64 |
| Into the operating state: | 0x00 | 0x01 NodeID |
| Into the pre-operational status: | 0x00 | 0x80 NodeID |

2. Enter operational state automatically

a. Default is "yes", that is, HMI enter the operational status (OPERATIONAL) automatically after power-up, NMT Master is no need to re-send start instructions.

b. If the "No", then HMI enter the pre-operational status (PRE-OPERATIONAL) automatically after power-up, only when the NMT Master sends start commands, system can entering the operational status (OPERATIONAL)

Note: PDO is effective only in the operating conditions (OPERATIONAL).

3. Baudrate

CAN port baud rate must be the same as CAN bus.

4. Node ID

HMI in the CAN bus ID, the ID only for the use of CANopen protocol. When using all the PDO (RX_PDO1 ~ RX_PDO64, TX_PDO1 ~ TX_PDO64), station number can not exceed 7, the bus station number of other devices also can not exceed 7.

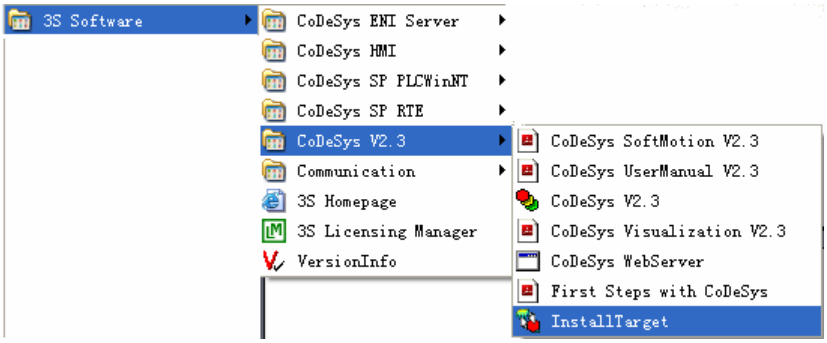
## PLC setting

**Note:** you can find MT5020.EDS in fieldbus file of Kinco HMIware Installation Directory, or you can download from www.kinco.cn.

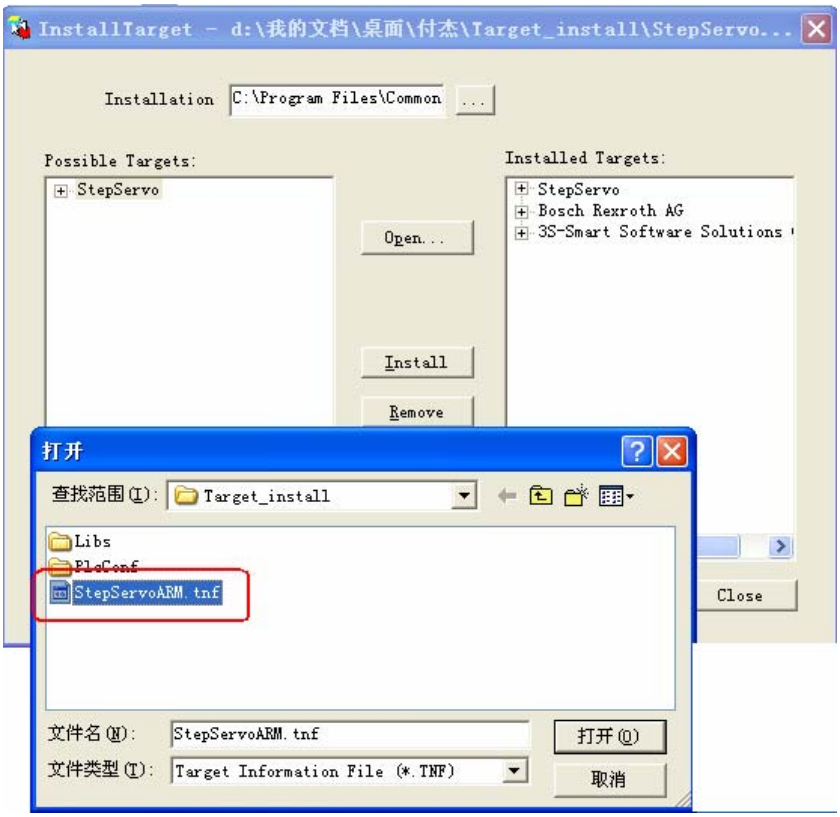
Take MT6000 for example (we use MT6000 HMI to test, and use 3S CODESYS software to download project)

1. Setup

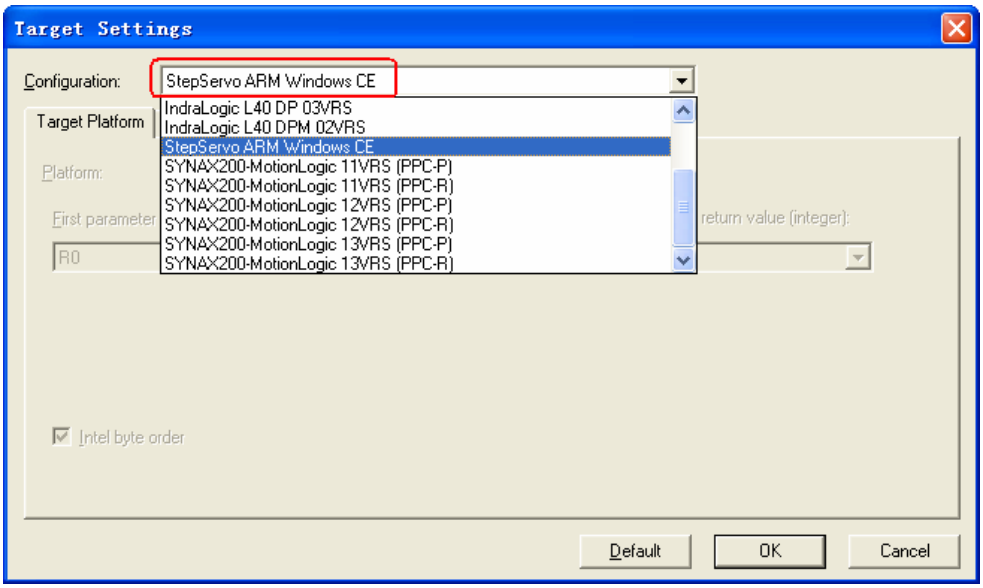
- Start Menu “3s Software”->“Codesys v2.3”->“installtarget”



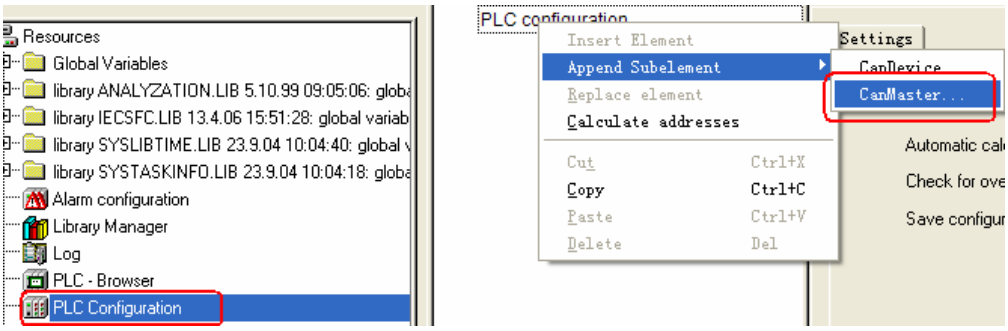

- Click “open” choose “StepServoARM.tnf”, and then click “install”.



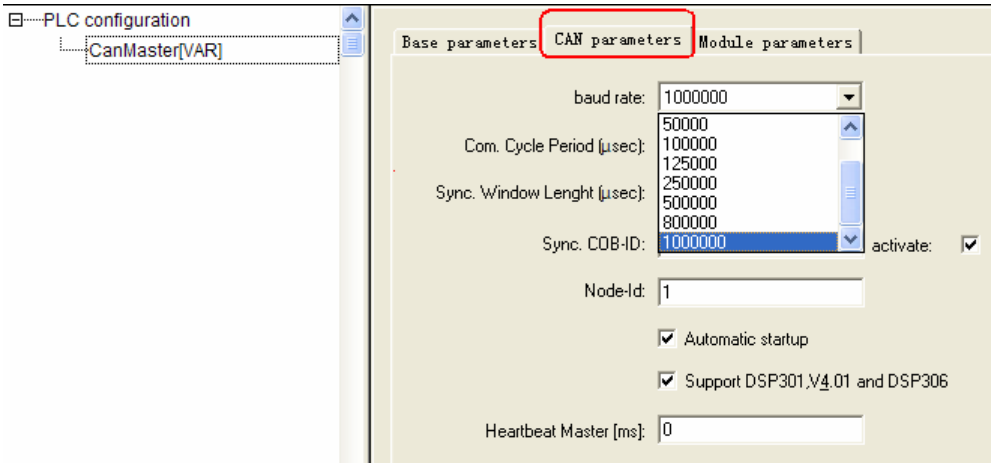

2. Copy “MT5020.EDS” to “C:\Program Files\Common Files\CAA -Targets\ StepServo\ PlcConf”
3. Configuration setting
   a. run codesys software，make a new project



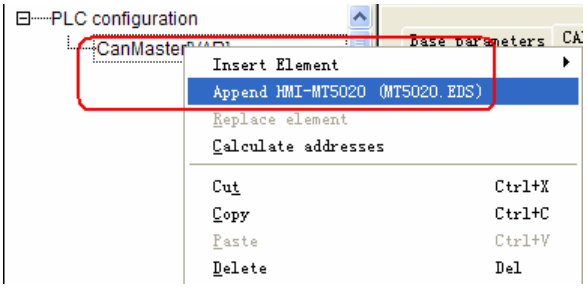

   b. configuration setting，right click “PLC configuration” and choose “CanMaster”



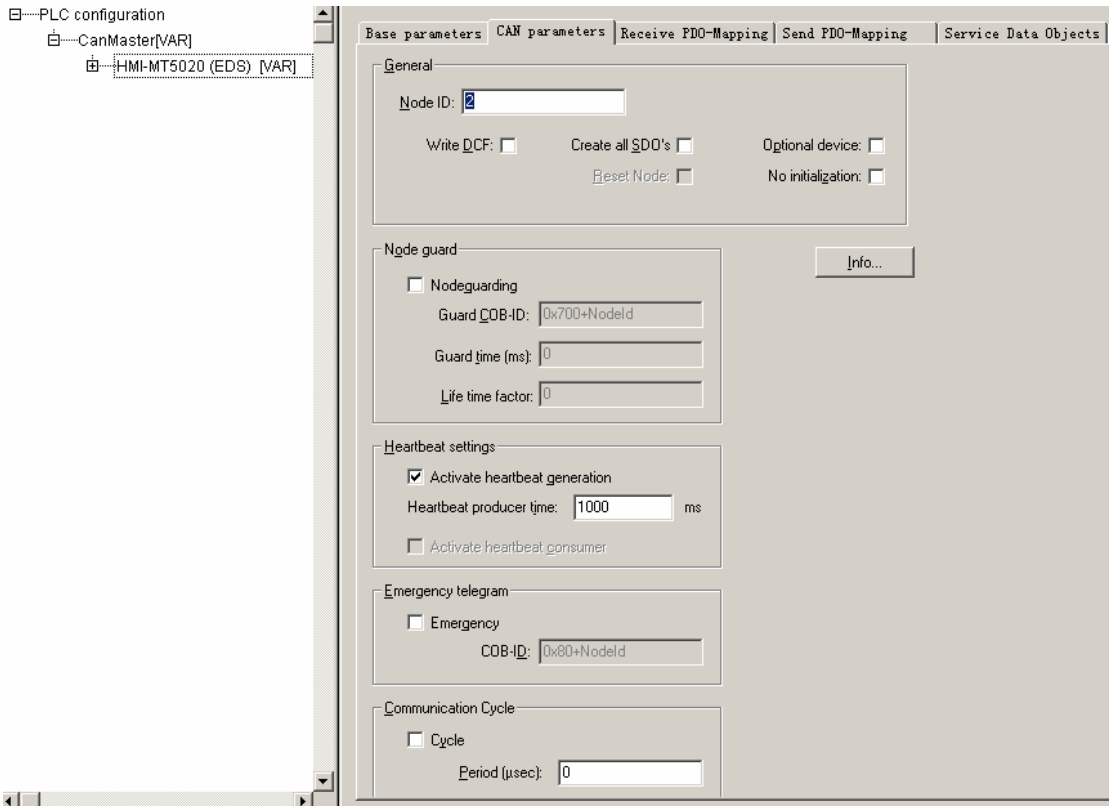

c. set Baud Rate



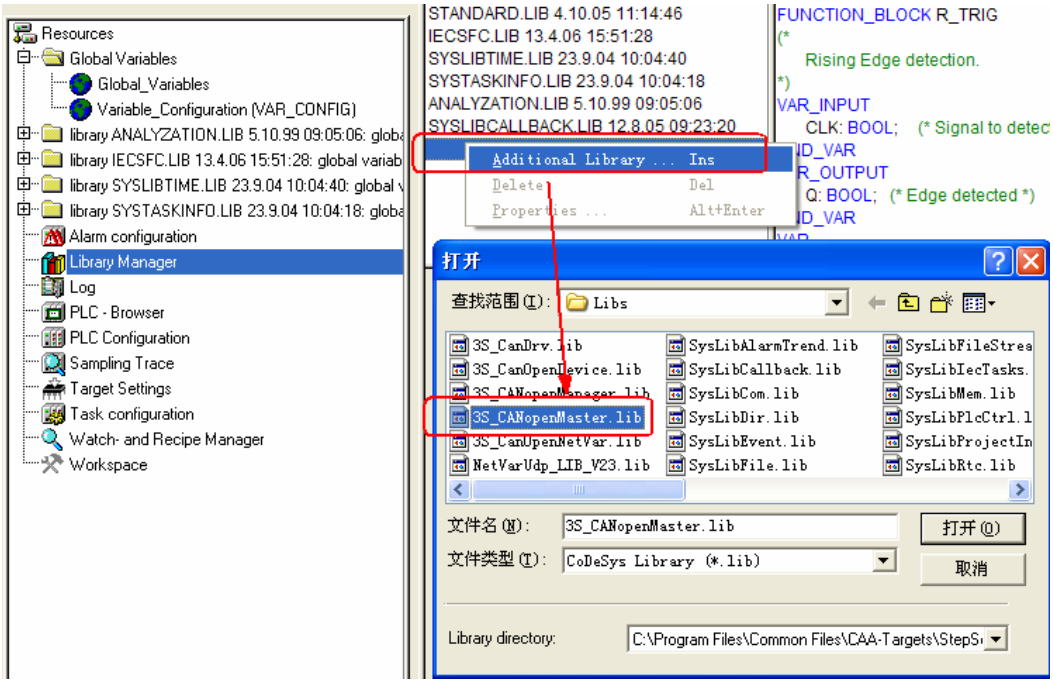

d. choose “CanMaster” right click “Append HMI-MT5020”



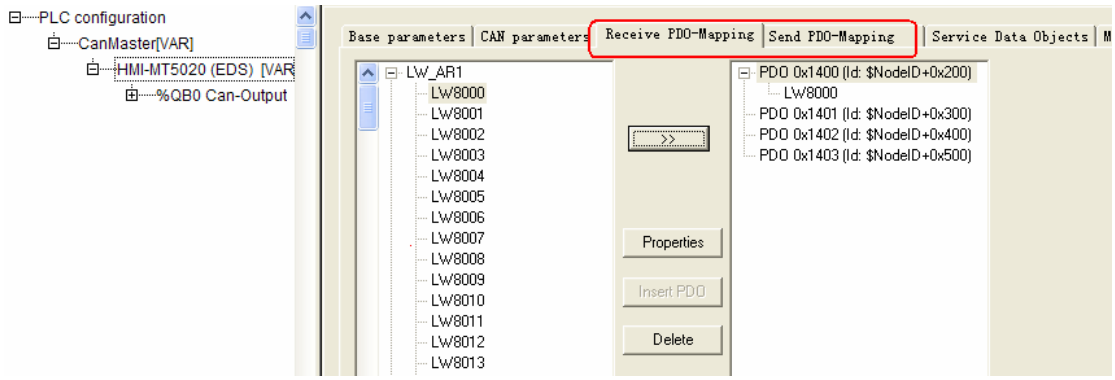

e. Node ID: set slave station No.



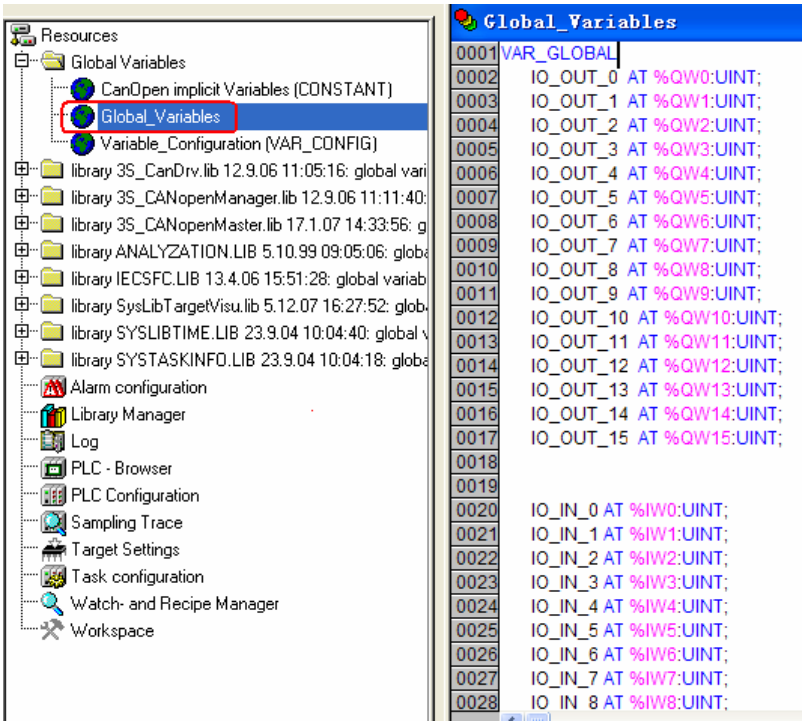

f. in the “Library Manager” we import “3S_CANopenMaster.lib”



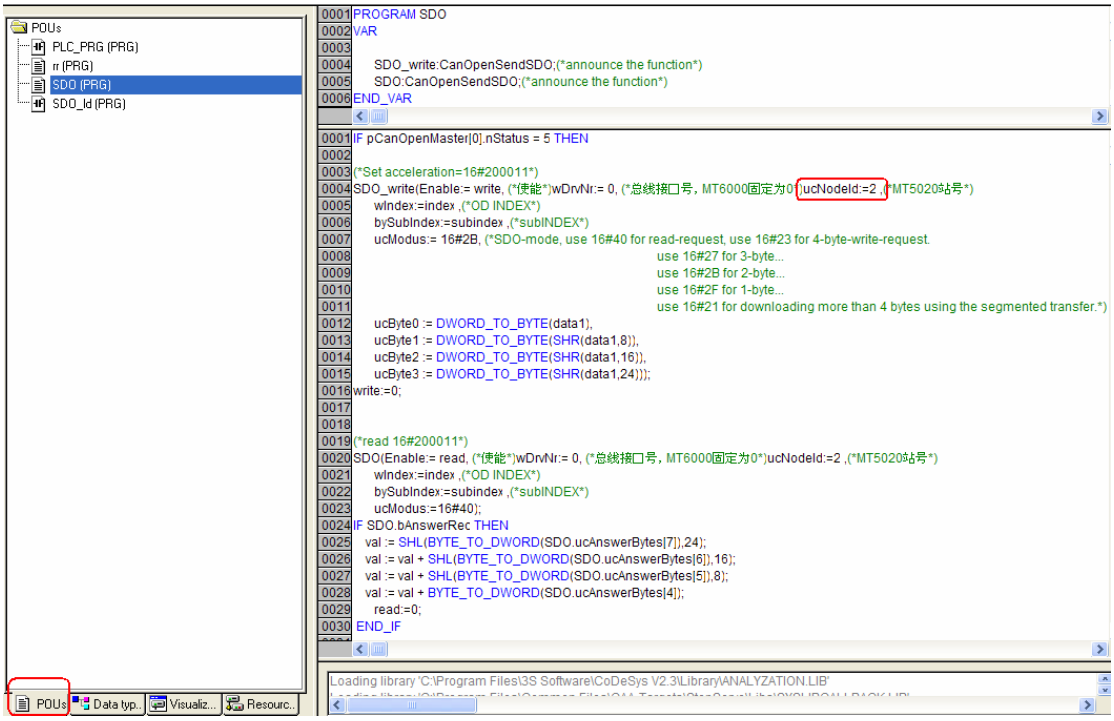

g. PDO read and write setting



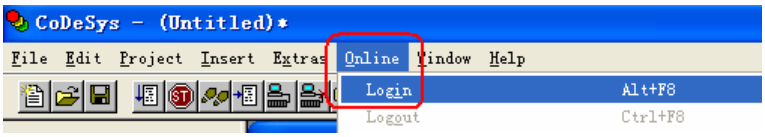

h. define Global Variable




i. SDO setting，this step need program




j. load the configuration into the PLC

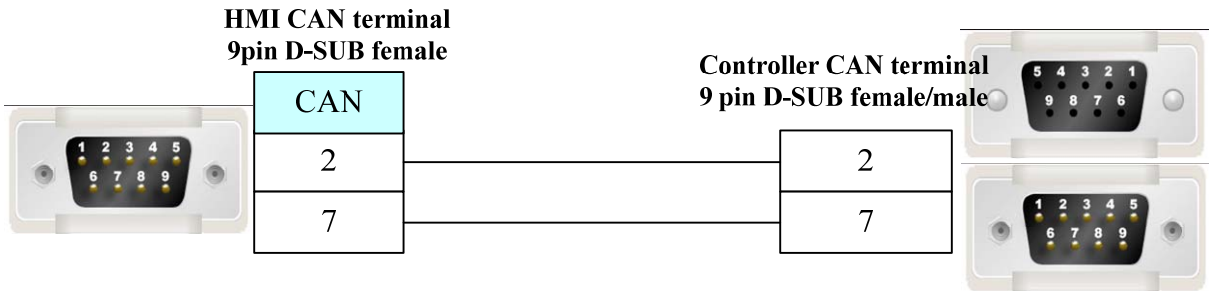



## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| | ———— | LW8000~LW8999 | DDDD | |

**Note:** we must make the setting of PD0, SD0 and LW the same as codesys

## Cable Diagram



## 6.13 Danfoss Inverter

### Serial Communication

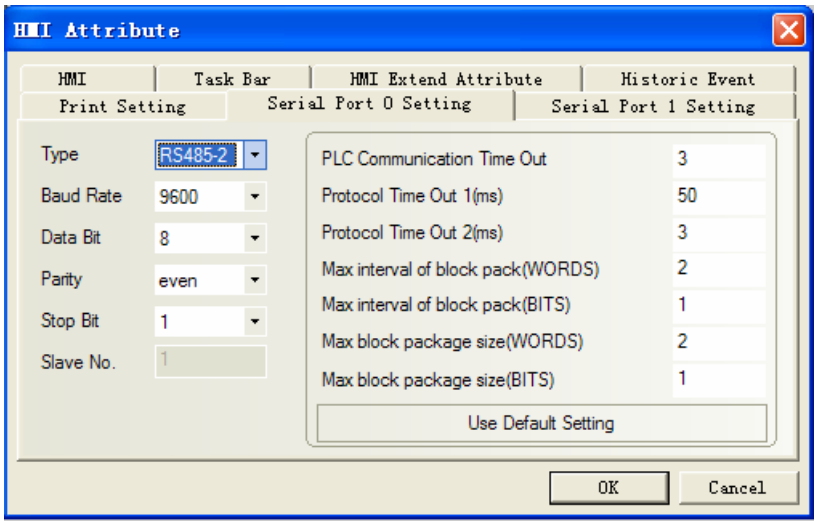
| Series | CPU | Link Module | Driver |
|---|---|---|---|
| Danfoss | FC-300 | RS485 on the CPU unit | Danfoss<br>Modbus RTU |

### System configuration

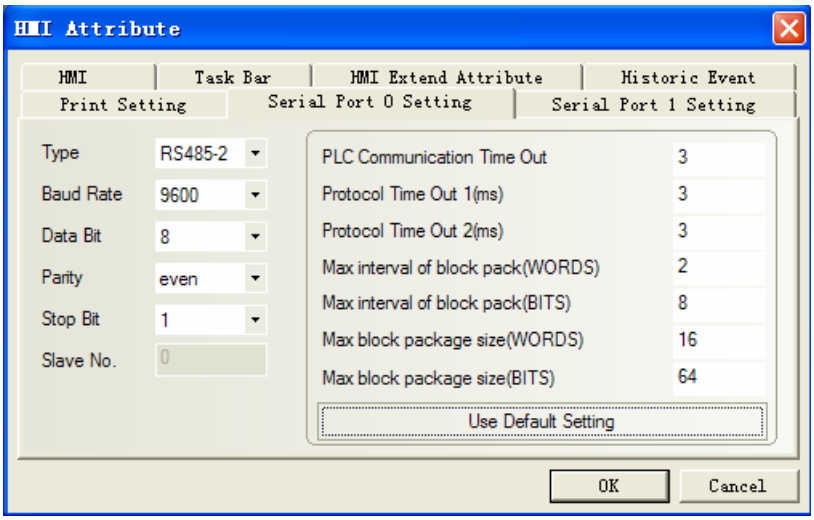
| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| Danfoss | FC-300 | RS485 on the CPU unit | RS485-2 | Setting | Your owner cable |
| Modbus RTU | FC-300 | RS485 on the CPU unit | RS485-2 | Setting | Your owner cable |

### Communication Setting

#### Danfoss Protocol:




#### Modbus RTU Protocol:




**Note:** Change the value of 8-30 to 2 on the Danfoss inverter for modbus protocol（Change the value of 8-30 to 0 for the Danfoss Protocol）

## Inverter

8-3* FC Port Setting

8-30 protocol

*[0] FC (danfoss protocol)

[2] Modbus (modbus protocol)

8-31 address

1 – 247 * 1 (HMI station No.)

8-32 FC Port Baud Rate

[0] 2400 Baud

[1] 4800 Baud

*[2] 9600 Baud

8-33 FC Port Parity

*[0] even, 1 stop bit

[1] Odd, 1 stop bit

[2] None, 1 stop bit

[3] None, 2 stop bit

## Inverter setting

Please refer to the manual of Danfoss inverter for details

## Supported Device

### Danfoss Protocol:

| Device | Bit Address | Word Address | Format |
|---|---|---|---|
| EEPROM Register(Double Word) | ———— | EPD0-7998.99999 | DDDD.DDDDD |
| EEPROM Register | ———— | EPW0-7998.99999 | DDDD.DDDDD |

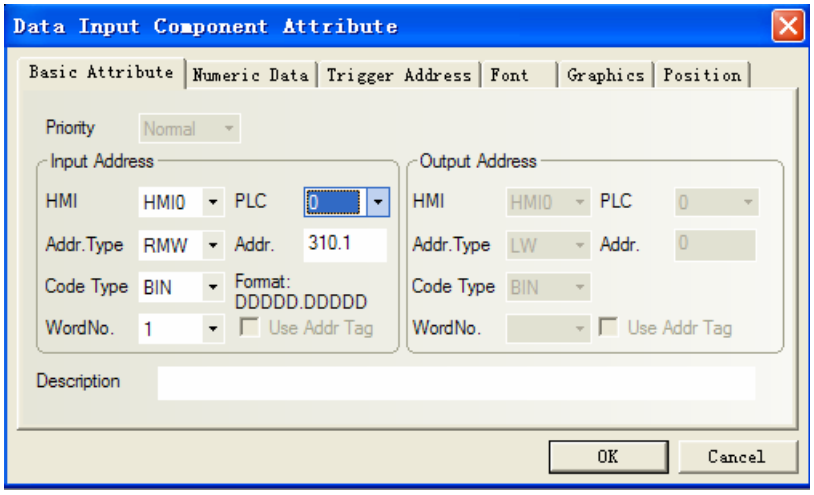
| | | | |
|---|---|---|---|
| RAM Register(Double Word) | ———— | RMD0-7998.99999 | DDDD.DDDDD |
| RAM Register | ———— | RMW0-7998.99999 | DDDD.DDDDD |

**Note：**

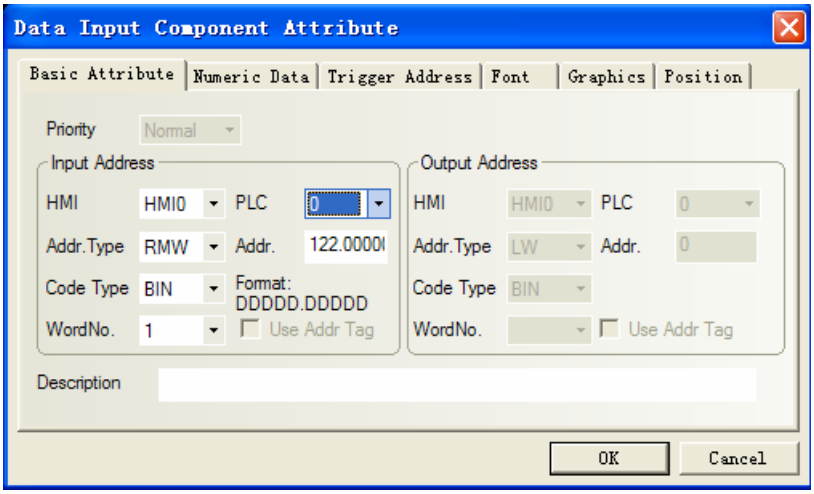
1. D indicates decimal; the prefix of RMD\RMW\EPD\EPW is address parameter, the suffix is index number.

2. Mapping of index address (adding radix point if having index address, index value follow radix point. Otherwise there's no radix point):

RMW310.1 is to 3-10, please clicking Menu, to find 3-10 to check.




3. If no index, radix point followed by default zero. As follows RMW122 to 1-22:




4. R/W of process word:

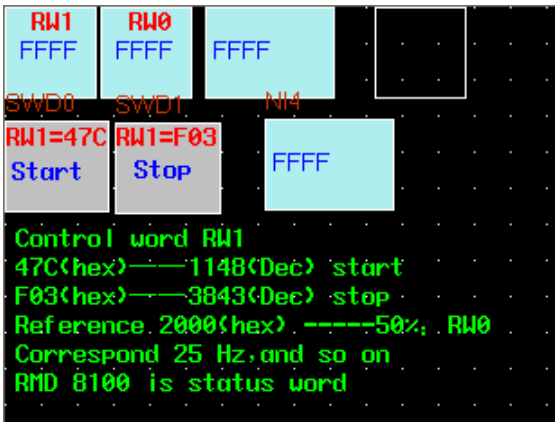
1） Address of EPD register is 8000, is for saving input command value of process word;

2） Address of EPD register is 8100, is for saving return value of process word;

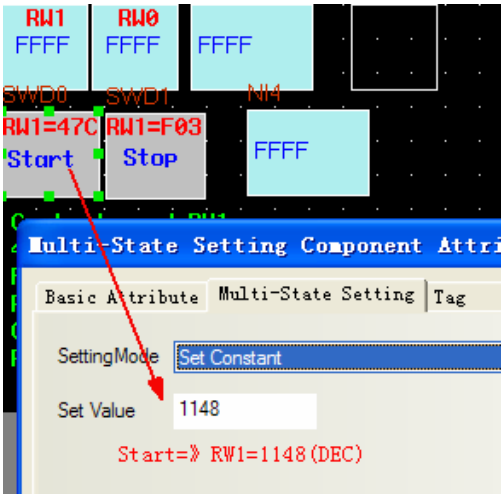
3） Input command value and return value can be showed by RW register.

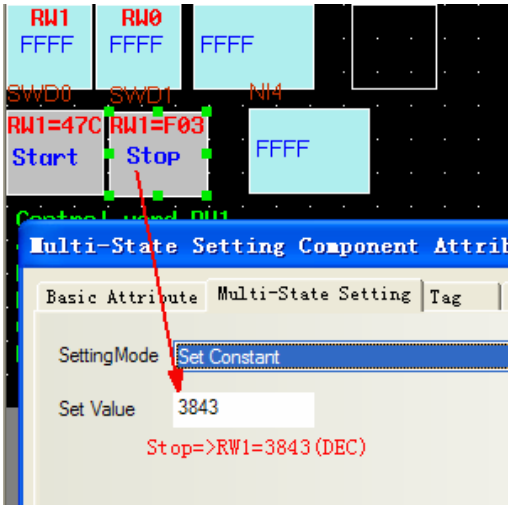
4）Start\Stop, Mapping of reference value to frequency:

Reason: RWD8000 is for inputting control word, it's not able to input control word by itself, but via sending RW1, RW0 to RWD8000 by timer.



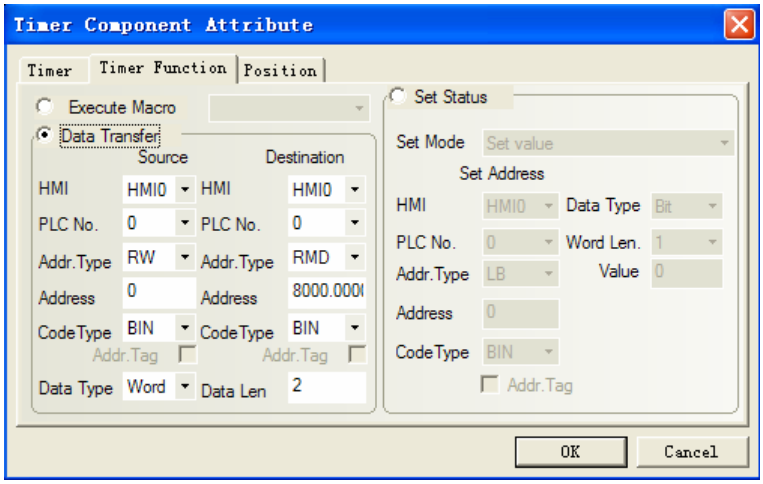

◆Control word RW1: While RW1=0x47C or 1148, it means start. While RW=0x0F03 or 3843, it means stop.




◆Frequency of RW0 mapping : If input 2000 to RW0, frequency is 25HZ, and input 4000, frequency is 50HZ, and so on.

◆Timer, send value of RW1 and RW0 to RWD8000.




## Modbus RTU Protocol:

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Output bit | 0X1-65535 | ------ | DDDDD | |

| | | | | |
|---|---|---|---|---|
| Input bit (read only) | 1X1-65535 | ------ | DDDDD | |
| Input Register (read only) | ------ | 3X1-65535 | DDDDD | |
| Output Register | ------ | 4X1-65535 | DDDDD | |

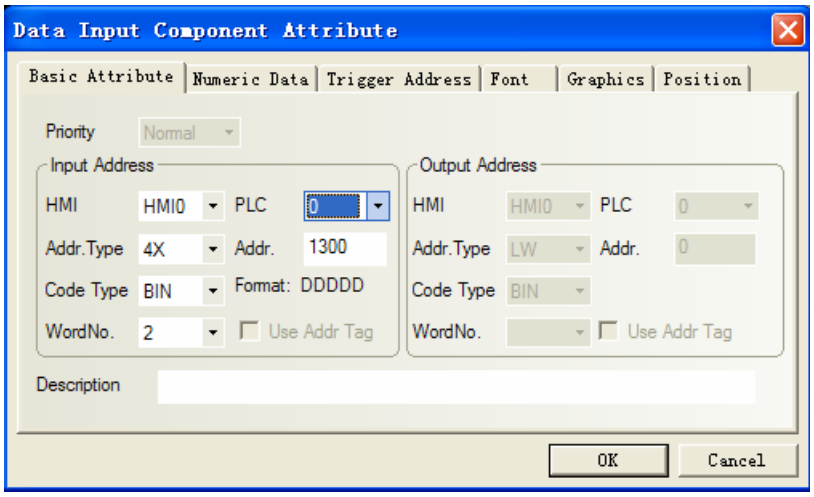
**Note：**

Mapping of address (same as *10 relationships):

2-01 is to 4X2010

3-02 is to 4X3020

So address 4X1300 is to 1-30 as following picture, here is double word address. To get more information, please refer to danfoss manual.

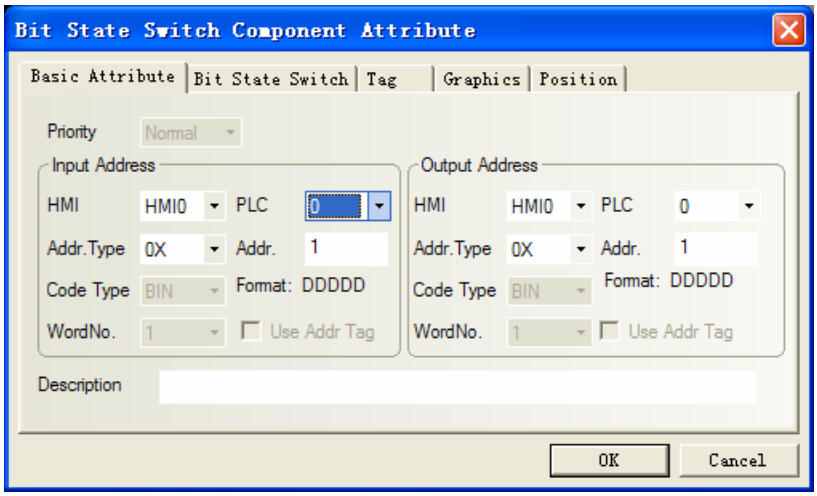



In addition, to get mapping address of startup, you should set bit of 3, 4, 5, 6,7,11 coil on:

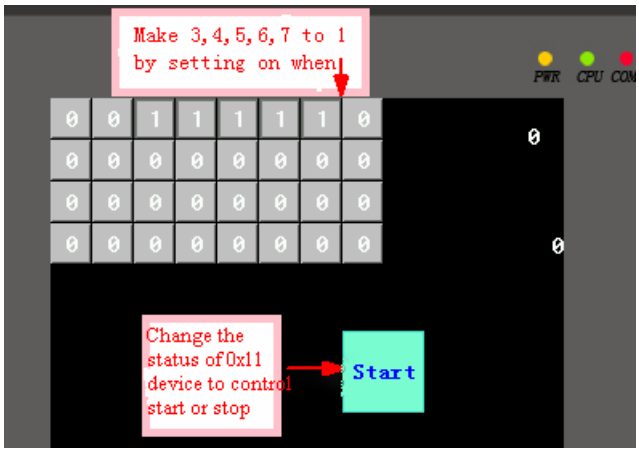
0x047C=0000 0100 0111 1100

Set 0X 3, 0X 4, 0X 5, 0X 6, 0X 7, 0X 11 all to “1” (if random one of these registers is “0”,inverter will stop.

| loop | 0 | 1 |
|---|---|---|
| 01 | Preset reference value LSB | |
| 02 | Preset reference value MSB | |
| 03 | DC brake | Do not DC brake |
| 04 | Inertial stop | Do not Inertial stop |
| 05 | Quickly stop | Do not Quickly stop |
| 06 | locking frequency | Do not locking frequency |
| 07 | Acc/Dec stop | start |
| 08 | Do not reset | reset |
| 09 | Do not inching | inching |
| 10 | Acc/Dec 1 | Acc/Dec 2 |
| 11 | valid data | invalid data |
| 12 | Relay 1 close | Relay 1 open |
| 13 | Relay 2 close | Relay 2 open |
| 14 | Set LSB | |
| 15 | Set MSB | |
| 16 | Do not reverse | reverse |
| Transducer controller word (FC structure) | | |




Set 0X 3，0X 4，0X 5，0X 6，0X 7 all to “1” via the method of setting on when window open; Change the inverter status (start or stop) by control the status of 0X11.




0x2000=0010 0000 0000 0000(binary bit from the 17th to the 32nd), setting the 30th bit to “1” means frequency is 25Hz, and “1” in the 29th bit means 12.5Hz, and so on. In short, the 0X17~0X32 is to control frequency. The inverter will show the value after starting.

0X17~0X32 for controlling frequency， mapping as follows:

0x4000 ——50Hz

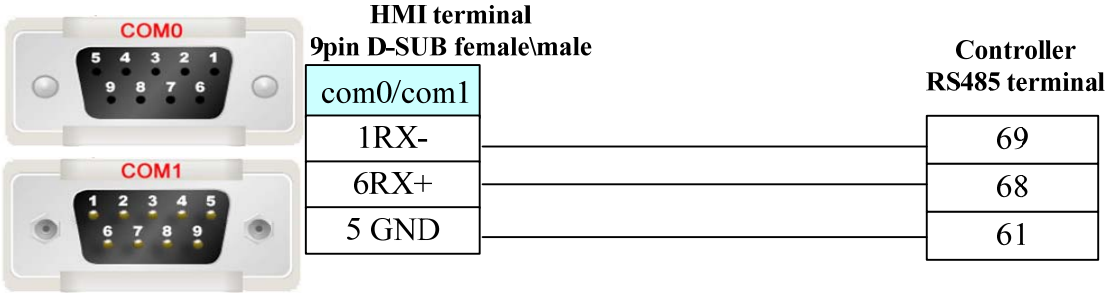
0x2000 ——25Hz

0x1000 ——12.5Hz (approximate)

0x800 ——6Hz

And so on, about 80 times

## Cable Diagram



## 6.14 Delta Corporation

### Serial Communication

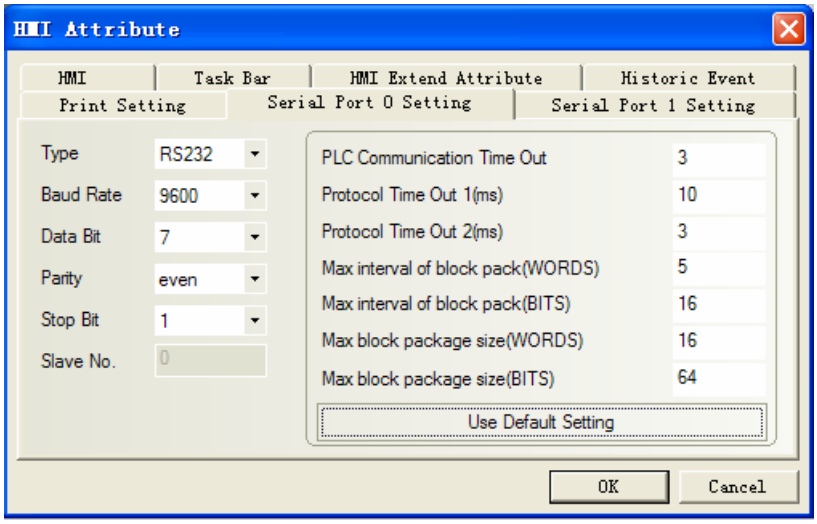
| Series | CPU | Link Module | Driver |
|---|---|---|---|
| DVP | DVP14SS11R2<br>DVP 24<br>DVP 32<br>DVP 60ES00<br>DVP-XXES01 | RS232 on the CPU unit | Delta DVP |
| | | RS485 on port | |

### System configuration

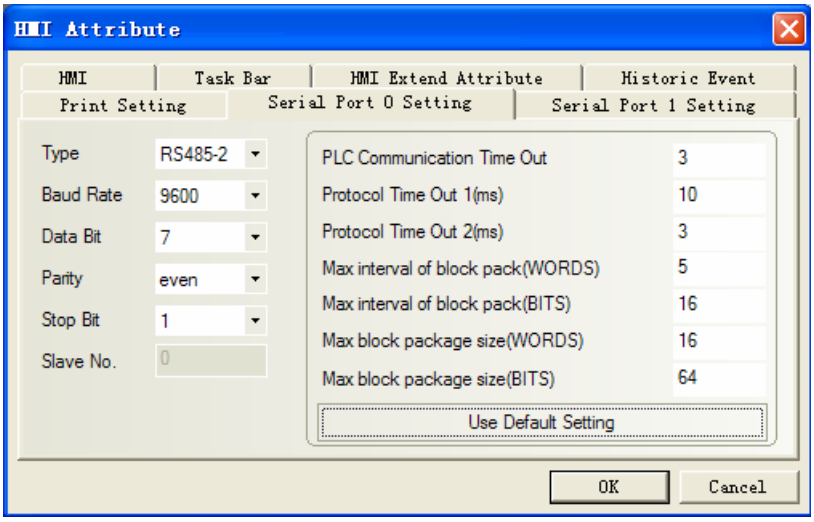
| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| DVP | DVP14SS11R2<br>DVP 24<br>DVP 32<br>DVP 60ES00<br>DVP-XXES01 | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 on port | RS485-2 | Setting | Your owner cable |

### Communication Setting

#### DVP RS232 communication



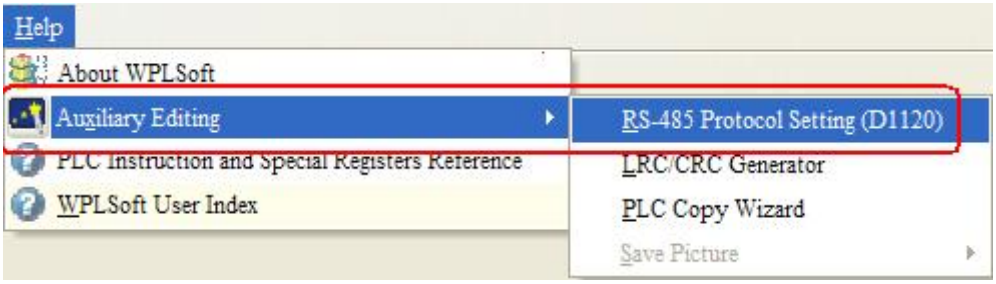

#### DVP RS485-2 communication

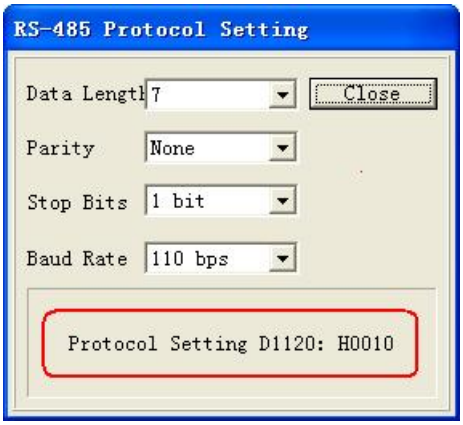



**Note:** RS485 communication, we should change the value of D1120 in the PLC Software.

### PLC setting

1. Wpl207->Auxiliary Editing->RS-485 Protocol Setting (D1120), you can set the value of D1120.




2. PLC connection with the Wpl207, monitoring changes in the value of D1120. for example, 9600, 7, even, 1. and then D1120=86（HEX）

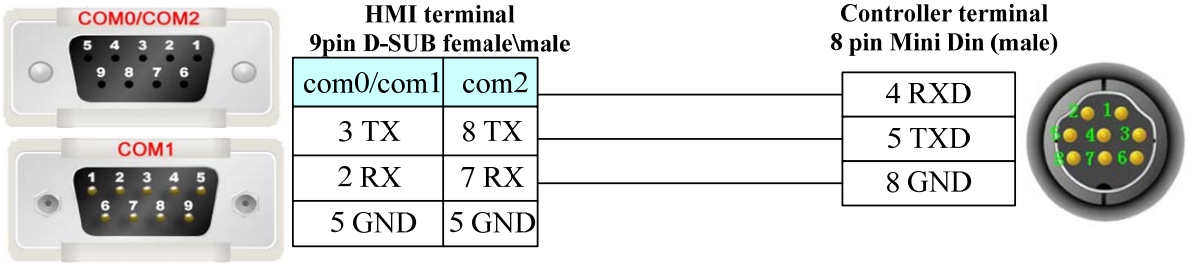
## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Input | X0-9999 | ------ | OOOO | |
| Output | Y0-9999 | ------ | OOOO | |
| Auxiliary Relay | M0-9999 | ------ | DDDD | |

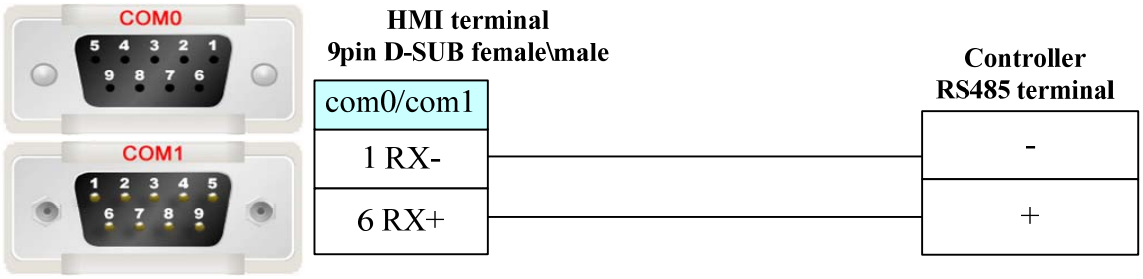
| | | | | |
|---|---|---|---|---|
| Step Relay | S0-9999 | ------ | DDDD | |
| Timer Relay | T0-9999 | ------ | DDDD | |
| Counter Relay | C0-9999 | ------ | DDDD | |
| Timer | ------ | TV0-9999 | DDDD | |
| Counter | ------ | CV0-127 | DDD | |
| Double word counter | ------ | CV2 232-255 | DDD | |
| Data Register | ------ | D0-9999 | DDDD | |

## Cable Diagram

### DVP RS232 communication cable




### DVP RS485-2 communication cable




# 6.15 Delta (Temperature Controller)

## Serial Communication

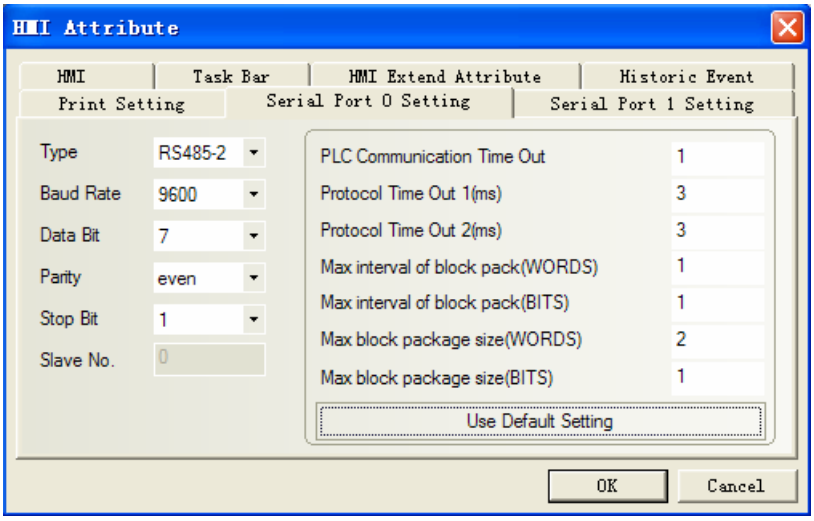
| Series | CPU | Link Module | Driver |
|---|---|---|---|
| DVP | DTA4848 | RS485 on the CPU unit | Delta DTA_DTB |
| | DTB9696VR | RS485 on the CPU unit | |

## System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| DVP | DTA4848 | RS485 on port | RS485-2 | Setting | Your owner cable |
| | DTB9696VR | RS485 on port | RS485-2 | Setting | Your owner cable |

# Communication Setting

## RS485-2 communication




**Note:** Only use 4X, not 3X in the ev5000 project.

# Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Output bit | 0X1-65535 | ------ | DDDDD | |
| Input bit (read only) | 1X1-65535 | ------ | DDDDD | |
| Input Register (read only) | ------ | 3X1-65535 | DDDDD | |
| Output Register | ------ | 4X1-65535 | DDDDD | |

# Controller Setting

## 1. Set the communication parameter

Setting communication parameter in “setting mode”

(1)

(Station number) matching the station No. of the Ev5000

(2)

(Baudrate)

(3)

(Data bit)

(4)

(Parity)

(5)

(Stop bit)

Non-supported formats: 7, N, 1 or 8, O, 2 or 8, E, 2(Databit、Parity、Stopbit).

(6) Setting the parameter of CoSH

The data must be ON when executing write operation in touch-screen.

## 2. Communication parameters and notes

**DTA4848：** Address and Content of Word Register (corresponds to 4X in the HMI)

| Address | Content | Explanations |
|---|---|---|
| 4700H | Process value (PV) | |
| 4701H | Set point (SV) | |
| 4702H | Upper-limit alarm 1 | In the running mode , when ALA1 is 1 and Upper-limit alarm is valid. |
| 4703H | Lower-limit alarm 1 | In the running mode , when ALA1 is 1 and Lower -limit alarm is valid. |
| 4704H | Upper-limit alarm 2 | In the running mode , when ALA2 is 2 and Upper-limit alarm is valid. |
| 4705H | Lower-limit alarm 2 | In the running mode , when ALA2 is 2 and Lower -limit alarm is valid. |
| 4706H | Upper-limit of temperature range | The data content should not be higher than the temperature range. In the setting mode |
| 4707H | Lower-limit of temperature range | The data content should not be lower than the temperature range. In the setting mode |
| 4708H | PB Proportional band | 1 to 9999, unit is 0.1. In the adjusting mode |
| 4709H | Ti Integral time | 0~9999. In the adjusting mode |
| 470AH | Td Derivative time | 0~9999. In the adjusting mode |
| 470BH | Heating/Cooling hysteresis | 0~9999 |
| 4710H | Input temperature sensor type | In the setting mode |
| 4711H | Control method | 0: PID (default), 1: ON/OFF, 2: manual tuning. In the setting mode |
| 4712H | Heating/Cooling control cycle | 0 to 99 second, 0:0.5s, in the adjusting mode or , when it is under the control of PID |
| 4713H | Proportional control offset error value | 0%~100% |
| 4714H | Temperature regulation value | -99.9~99.9. in the adjusting mode |

| | | |
|---|---|---|
| 4715H | Alarm 1 type | Please refer to the contents of the "Alarm Outputs" for detail. In the setting mode |
| 4716H | Alarm 2 type | Please refer to the contents of the "Alarm Outputs" for detail. In the setting mode |
| 4717H | Temperature unit display selection | °C : 1 (default), °F : 0. in the setting mode |
| 4718H | Heating/Cooling control Selection | Heating: 0 (default), Cooling: 1. in the setting mode |
| 4719H | Control Run/Stop setting | Run: 1 (default), Stop: 0. in the running mode |
| 471AH | Communication write-in selection | Communication write in disabled: 0 (default), Communication write in enabled: 1. In the setting mode |
| 471BH | Software Version | V1.00 indicates 0 x 100 |
| 4729H | AT Setting | OFF: 0 (default), ON: 1. in the adjusting mode |
| 4733H | CT monitor value | Unit is 0.1A. in the running mode |

**DTB9696VR：** Address and Content of Word Register (corresponds to 4X in the HMI)

| Address | Content | Explanation |
|---|---|---|
| 1000H | Process value (PV) | Measuring unit is 0.1, updated one time in 0.4 second |
| 1001H | Set point (SV) | Unit is 0.1, °C or °F |
| 1002H | Upper-limit of temperature range | The data content should not be higher than the temperature range. In the setting mode |
| 1003H | Lower-limit of temperature range | The data content should not be lower than the temperature range. In the setting mode |
| 1004H | Input temperature sensor type | Please refer to the contents of the "Temperature Sensor Type and Temperature Range" for detail. In the setting mode |
| 1005H | Control method | 0: PID, 1: ON/OFF, 2: manual tuning, 3: PID grogram control. In the setting mode |
| 1006H | Heating/Cooling control selection | 0: Heating, 1: Cooling, 2: Heating/Cooling, 3: Cooling/Heating. In the setting mode |

| | | |
|---|---|---|
| 1007H | 1st group of Heating/Cooling control cycle | 0 ~ 99, 0:0.5 sec. in the adjusting mode HtPd or CtPd |
| 1008H | 2nd group of Heating/Cooling control cycle | 0 ~ 99, 0:0.5 sec. in the adjusting mode HCPd |
| 1009H | PB Proportional band | 0.1 ~ 999.9. in the adjusting mode PB |
| 100AH | Ti Integral time | 0~9999. in the adjusting mode tI |
| 100BH | Td Derivative time | 0~9999. in the adjusting mode dt |
| 100CH | Integration default | 0 ~ 100%, unit is 0.1%. in the adjusting mode toF0 |
| 100DH | Proportional control offset error value, when Ti = 0 | 0 ~ 100%, unit is 0.1%. in the adjusting mode PdoF |
| 100EH | The setting of COEF when Dual Loop output control are used | 0.01 ~ 99.99, unit is 0.01 (setting when it is under the control of PID ) in the adjusting mode CoEF |
| 100FH | The setting of Dead band when Dual Loop output control are used | -999 ~ 9,999. in the adjusting mode dEAd |
| 1010H | Hysteresis setting value of the 1st output group | 0~9999. in the adjusting mode HtS or CtS |
| 1011H | Hysteresis setting value of the 1st output group | 0~9999. (setting when Dual Loop output control are used ) in the adjusting mode HtS or CtS |
| 1012H | Hysteresis setting value of the 1st output group | Unit is 0.1%; write operation is valid under manual tuning mode only. In the running mode out1 |
| 1013H | Hysteresis setting value of the 2nd output group | Unit is 0.1%; write operation is valid under manual tuning mode only. In the running mode out2 |
| 1014H | Upper-limit regulation of analog linear output | 1 Unit = 2.8uA (Current Output) = 1.3mV (Linear Voltage Output) in the adjusting mode CrHt |
| 1015H | Lower-limit regulation of analog linear output | 1 Unit = 2.8uA (Current Output) = 1.3mV (Linear Voltage Output) in the adjusting mode CrLo |
| 1016H | Temperature regulation value | -99.9 ~ +99.9, unit: 0.1. in the adjusting mode tPoF |
| 1017H | Analog decimal setting | 0~3. in the running mode SP |
| 1018H | Time for valve from full open to full close | 0.1~999.9. in the adjusting mode uAtr |

| | | |
|---|---|---|
| 1019H | Dead Band setting of valve | 0 ~ 100%; unit: 0.1%. in the adjusting mode |
| 101AH | Upper-limit of feedback signal set by valve | 0~1024. in the adjusting mode |
| 101BH | Lower-limit of feedback signal set by valve | 0~1024. in the adjusting mode |
| 101CH | PID parameter selection | 0~4. in the adjusting mode |
| 101DH | SV value corresponded to PID value | Only valid within available range, unit: 0.1 scale. in the adjusting mode |
| 1020H | Alarm 1 type | In the setting mode |
| 1021H | Alarm 2 type | In the setting mode |
| 1022H | Alarm 3 type | In the setting mode |
| 1023H | System alarm setting | 0: None (default), 1~3: Set Alarm 1 to Alarm 3. In the setting mode |
| 1024H | Upper-limit alarm 1 | In the setting mode unit: 0.1 |
| 1025H | Lower-limit alarm 1 | In the setting mode |
| 1026H | Upper-limit alarm 2 | In the setting mode |
| 1027H | Lower-limit alarm 2 | In the setting mode |
| 1028H | Upper-limit alarm 3 | In the setting mode |
| 1029H | Lower-limit alarm 3 | In the setting mode |
| 102AH | Read LED status | b0 : Alm3, b1: Alm2, b2: F, b3: ℃, b4: Alm1, b5: OUT2, b6: OUT1, b7: AT |
| 102BH | Read pushbutton status | b0: Set, b1: Select, b2: Up, b3: Down. 0 is to push |
| 102CH | Setting lock status | 0: Normal, 1: All setting lock, 11: Lock others than SV value. In the running mode |
| 102DH | CT read value | Unit: 0.1A. In the running mode |
| 102FH | software version | V1.00 indicates 0x100. |
| 1030H | Start pattern number | 0 ~ 7. In the running mode (setting when it is |

| | | |
|---|---|---|
| | | under the control of PID and the mode of PSTP) |
| 1040H~ 1047H | Actual step number setting inside the correspond pattern | 0 ~ 7 = N, indicate that this pattern is executed from step 0 to step N. in the setting mode PSO |
| 1050H~ 1057H | Cycle number for repeating the execution of the correspond pattern | 0 ~ 99 indicate that this pattern has been executed for 1 ~ 100 times. In the setting mode CYCO |
| 1060H~ 1067H | Link pattern number setting of the correspond pattern | 0 ~ 8, 8 indicates the program end. 0~7 indicates the next execution pattern number after executing the current pattern. In the setting mode LINO |
| 2000H~ 203FH | Pattern 0~7 temperature set point setting(Pattern 0 temperature is set to2000H ~ 2007H) | -999 ~ 9,999. in the setting mode SP00~SP07 |
| 2080H~ 20BFH | Pattern 0~7 execution time setting(Pattern 0 time is set to 2080H~2087H) | Time 0 ~ 900 (1 minute per scale). in the setting mode tI00~tI07 |

**DTB9696VR：** Address and Content of Bit Register (corresponds to 1X in the HMI)

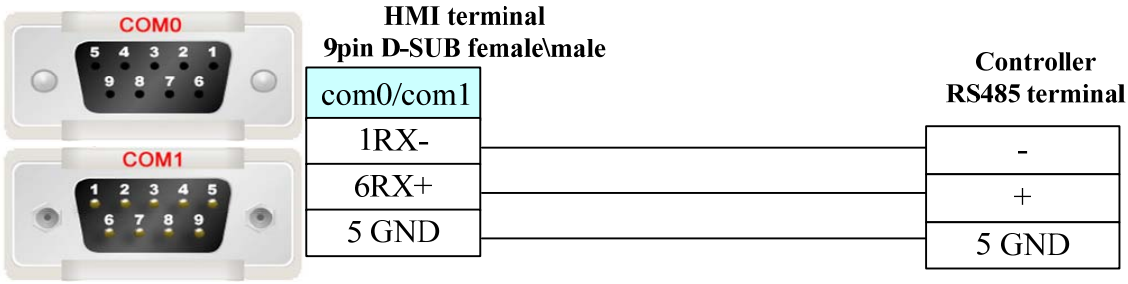
| | | |
|---|---|---|
| 0810H | Communication write-in selection | Communication write in disabled: 0 (default), Communication write in enabled: 1. In the setting mode CoSH |
| 0811H | Temperature unit display selection | °C/linear input (default): 1 , °F : 0. in the setting mode tPUn |
| 0812H | Decimal point position selection | Except for the thermocouple B, S, R type, all the other thermocouple type are valid. (0 or 1). In the running mode SP |
| 0813H | AT setting | OFF: 0 (default), ON : 1. In the adjusting mode At |
| 0814H | Control RUN/STOP setting | 0: STOP, 1: RUN (default). In the running mode r-S |
| 0815H | STOP setting for PID program control | 0: RUN (default), 1: STOP. In the running mode r-S |
| 0816H | Temporarily STOP for PID program control | 0: RUN (default), 1: Temporarily STOP. In the running mode r-S |
| 0817H | Valve feedback setting status | 0: w/o feedback (default), 1: feedback function. |
| 0818H | Auto-tuning valve feedback status | 0: Stop AT (default), 1: Start AT |

### 3. Communication Parameters List

- Communication protocol: Modbus (ASCII); Available communication address: 1 to 255, 0 is broadcast address
- Function code: 03H: read the contents of register (Max. 3 words).
  06H: write 1 (one) word into register.

## Cable Diagram

### DVP RS485-2 communication cable




## 6.16 EB-MOD2P-01(Bus Bridge)

## Serial Communication

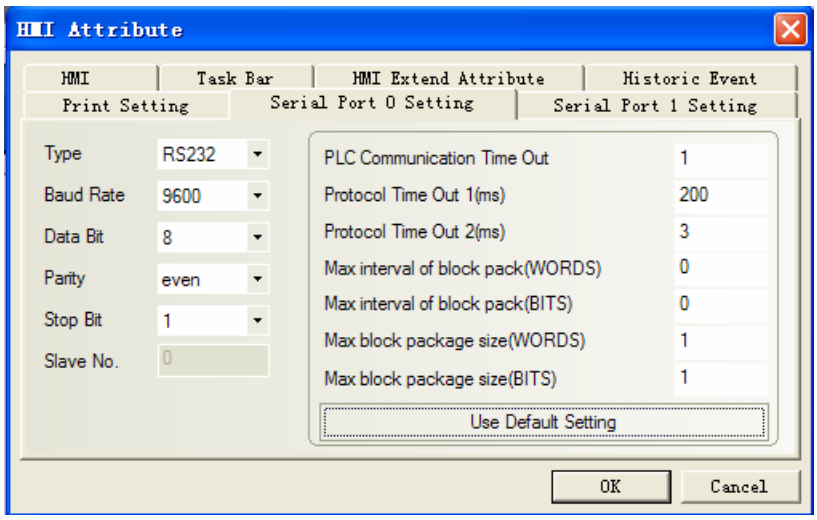
| Series | CPU | Link Module | Driver |
|---|---|---|---|
| FieldBus Bridge | EB-MOD2P-01 | RS232 on the CPU unit | EB-MOD2P-01 |
| | | RS485 on the CPU unit | |
| | | RS422 on the CPU unit | |

## System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| FieldBus Bridge | EB-MOD2P-01 | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS422 on the CPU unit | RS422 | Setting | Your owner cable |
| | | RS485 on the CPU unit | RS485 | Setting | Your owner cable |

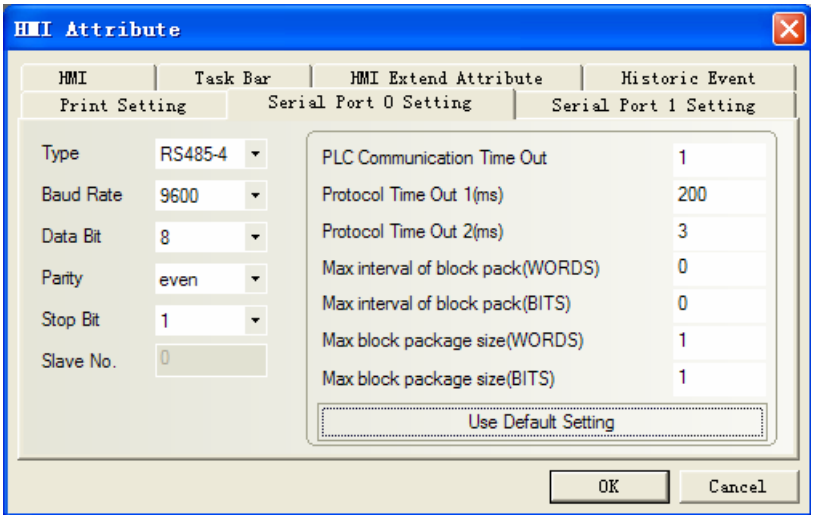
## Communication Setting

### EB-MOD2P-01 RS232 communication

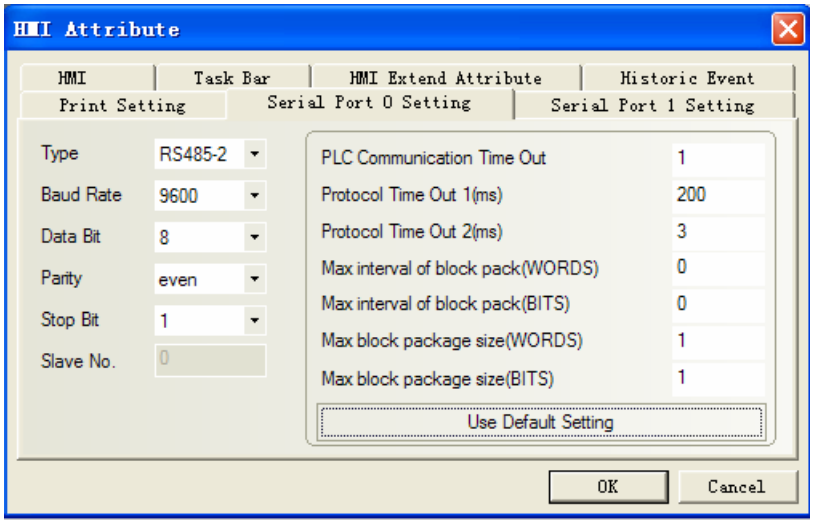



**Note:** Communication parameter must the same as the controller panel.

## EB-MOD2P-01 RS485-4 communication




## EB-MOD2P-01 RS485-2 communication



## Supported Device

EB-MOD2P-01

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Internal/External Output bit | 0X1-60 | ------ | DDDDD | |
| Internal/External Input bit | 1X1-60 | ------ | DDDDD | |
| Data Register bit | 3X_bit1-60 | ------ | DDDDD | |
| Data Register bit | 4X_bit1-60 | ------ | DDDDD | |
| Simulate Input Register bit | ------ | 3X1-60 | DDDDD | |
| Data Register | ------ | 4X1-60 | DDDDD | |
| Data Register | ------ | 5X1-60 | DDDDD | |
| Data Register | ------ | 6X1-60 | DDDDD | |
| Data Register | ------ | 3X-DINV 1-60 | DDDDD | |
| Data Register | ------ | 4X-DINV 1-60 | DDDDD | |

**Note**：The correspondence between the device of Kinco HMIware and the s7-300 software, as follows:

4X-DINV----------PID

e.g.：4X-DINV1----------PID256　　4X-DINV3----------PID260

3X-DINV----------PQD

e.g.：3X-DINV1----------PQD256　　3X-DINV3----------PQD260

4X ----------PIW

e.g.：4X1 ----------PIW256　　4X2----------PIW258

3X----------PQW

e.g.：3X1----------PQW256　3X2----------PQW258

0X----------I

e.g.：0X1----------I0.0　　0X9----------I1.0

1X----------Q

e.g.：1X1----------Q0.0　　1X9----------Q1.0

4X_BIT ----------PIW（binary）

e.g.：4X_BIT1.0~~1.15----------PIW256（binary）

3X_BIT----------PQW（binary）

e.g. ：3X_BIT1.0~~1.15----------PQW256（binary）

## PLC software setting

### Setup the GSD in the S7-300 software

**Procedure ：**

（1）.Close all stations in “HW Config”.

（2）.And select “option”-->”setup GSD”.

（3）. In the “installation *.GSD file” dialog box, select Source: folders contain *. GSD file, or the STEP 7 project contain *. GSD file

（4）.Select one or more files from *.GSD file list, and then click on "install" button.

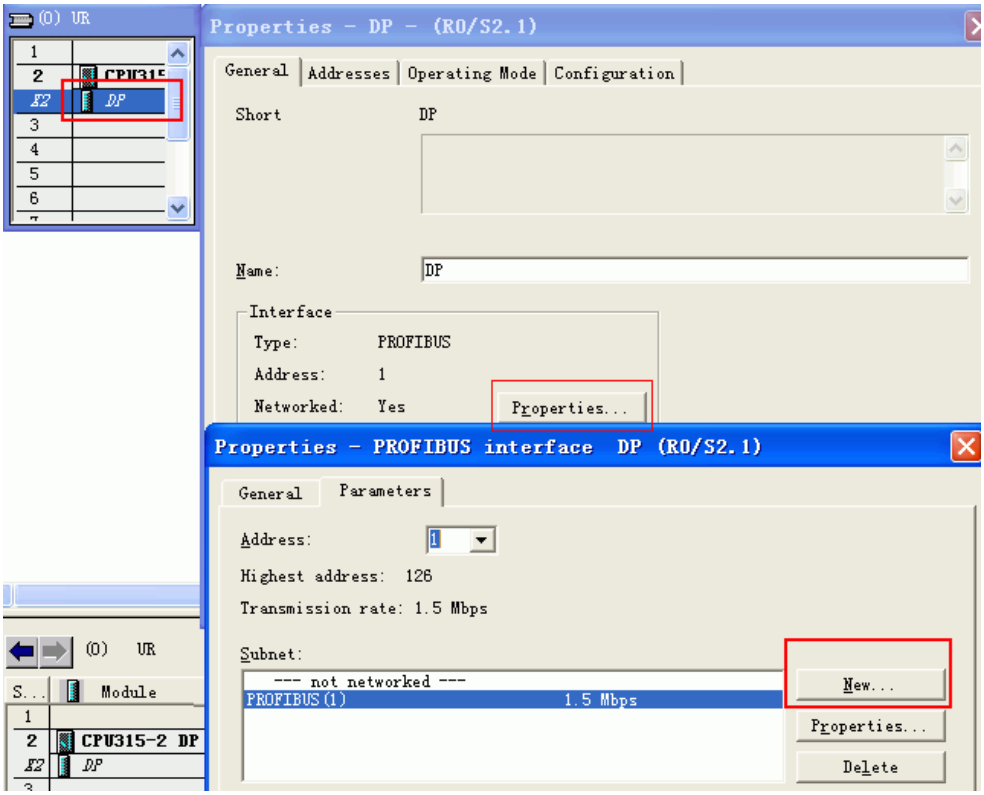
Copy the icon (. BMP file) to the relevant path, such as BRIDGE product：Bitmap_Device = "EVIEW", that copy the "EVIEW" BMP file to the relevant path: c:\siemens\step7\s7data\nsbmp or c:\siemens\cpbv51\bitmaps

After installation, you can find the appropriate symbol in "PROFIBUS DP\GATWAY".

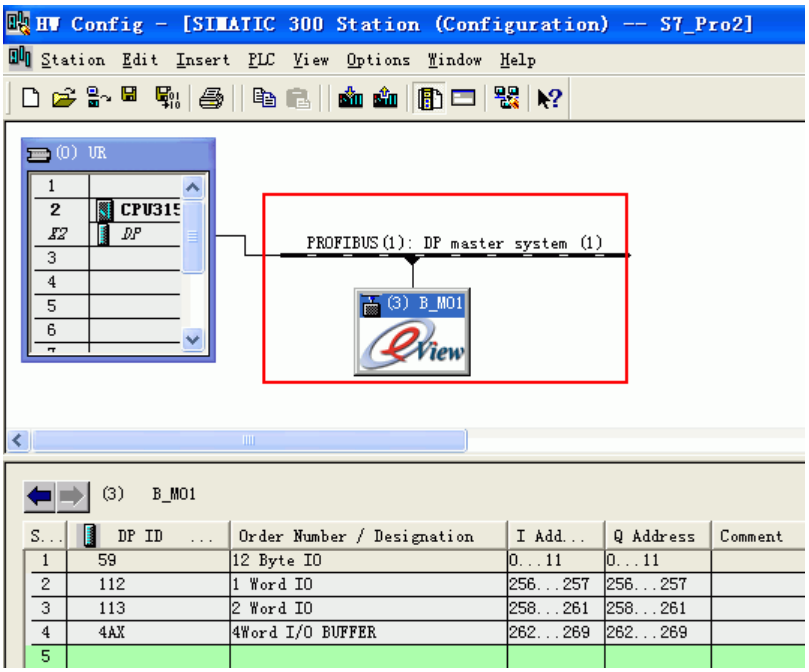
## Project configuration

（1）Use the guide to set up projects in the s7-300 software.

（2）Double click “DP” of "HW Config"->attribute->new

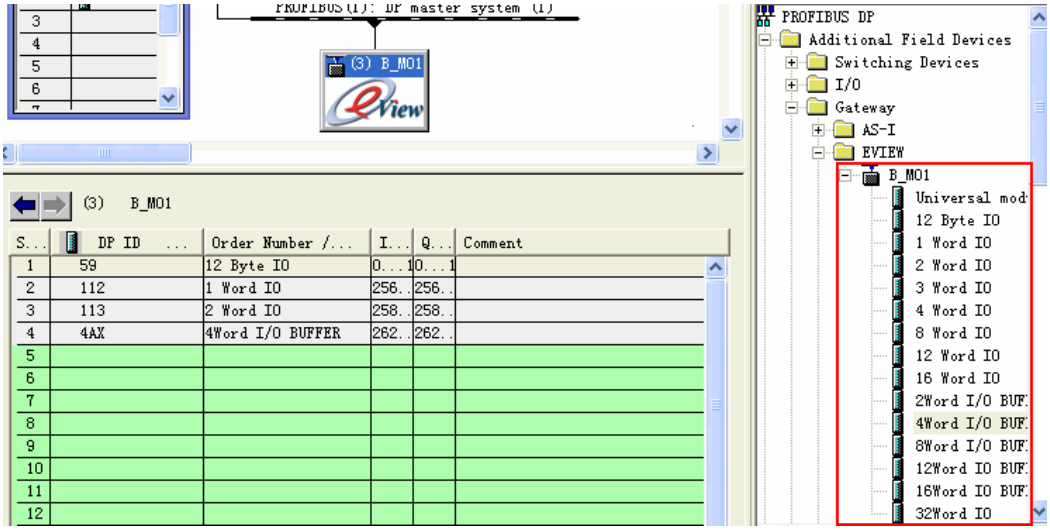



（3）After press “ok”, and then give a connection as follows：


HW Config - [SIMATIC 300 Station (Configuration) -- S7_Pro2]
Station Edit Insert PLC View Options Window Help
(0) UR
CPU315
DP
PROFIBUS(1): DP master system (1)
(3) B_MO1
(3) B_MO1
S... DP ID ... Order Number / Designation I Add... Q Address Comment
1 59 12 Byte IO 0...11 0...11
2 112 1 Word IO 256...257 256...257
3 113 2 Word IO 258...261 258...261
4 4AX 4Word I/O BUFFER 262...269 262...269
5

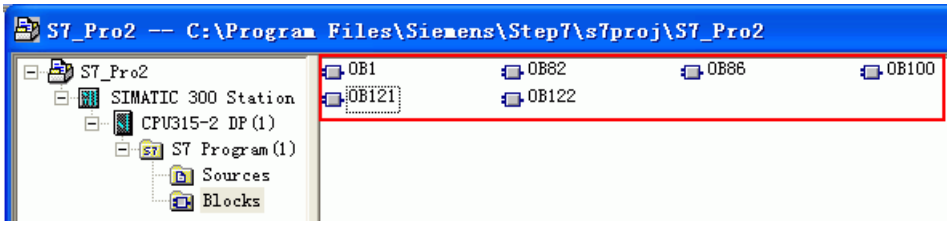
**Note:** the address of DP can’t be the same as MPI’s. Double click the address number to change.

（4）Double click “GATEWAY"->"eview"->"B_MO1"to extend device.




**Note:** for project configuration of BRIDGE, you must configure DI/D0 resource of 12 bytes firstly. AI/AO is optional.

（5）Must Use OB82,OB86,OB100,OB121,OB122 in the ladder program of the external device, otherwise you need to manually operate the RUN switch of the external device as “RUN,STOP,RUN” in this order upon restart the display or PLC. When you use those special OB block, the communication will be automatically recovered even if you restart the display or PLC.




（6）Save and compile, and download to module, then the light of profibus is on.

（7）After configuration, and then you can program.

Bus Bridge setting**:**

（1） Setting ID of Profibus by switching 8-bit Dip(DIP1 is lowest bit, DIP8 is highest bit),range is from 3 to 125;

ID must be the same as its configuration in Siemens software. As above picture for example, setting is “3”, that the switch DIP1 and DIP2 on the panel of profibus are set ON, others are OFF.

（2）Profibus support baudrate as follows: 9.6Kbit/s, 19.2Kbit/s, 45.45Kbit/s, 93.75Kbit/s, 187.5Kbit/s, 0.5Mbit/s, 1.5Mbit/s, 3Mbit/s, 6Mbit/, 12Mbit/s，and interface is automatically adaptive.

（3）A cable (purple),connect DP interface of s7-300 and bus bridge of profibus. Two sides have active terminal resistors; Switch on the s7-300 PLC is off, on the busbridge is on.

（4）Setting baudrate of modbus by switching DIP1-3 of modbus ID port, support 8 kinds of baudrate .Setting as follows:

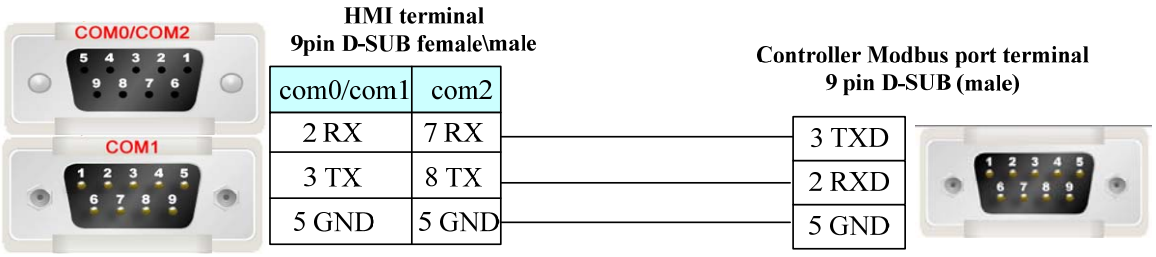
| 1 | 2 | 3 | Baud |
|---|---|---|---|
| OFF | OFF | OFF | 1200 |
| ON | OFF | OFF | 2400 |
| OFF | ON | OFF | 4800 |
| ON | ON | OFF | 9600 |
| OFF | OFF | ON | 19200 |

| | | | |
|---|---|---|---|
| ON | OFF | ON | 38400 |
| OFF | ON | ON | 57600 |
| ON | ON | ON | 115200 |

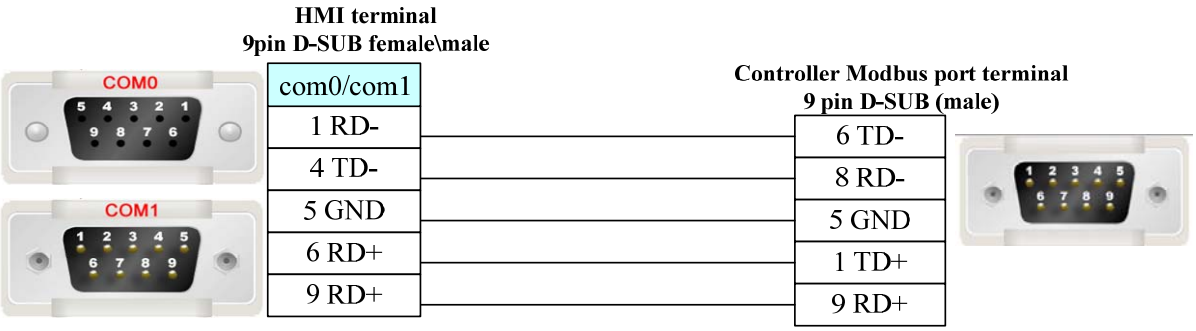
（5）Setting station number of modbus by switching DIP4-8 of modbus ID port ,support 1 to 30 kinds of station number(DIP4 is lowest bit,DIP8 is highest bit, if DIP4 is on and DIP5~8 is off, it means station number is 00001,that is No. 1 station).

## Cable Diagram

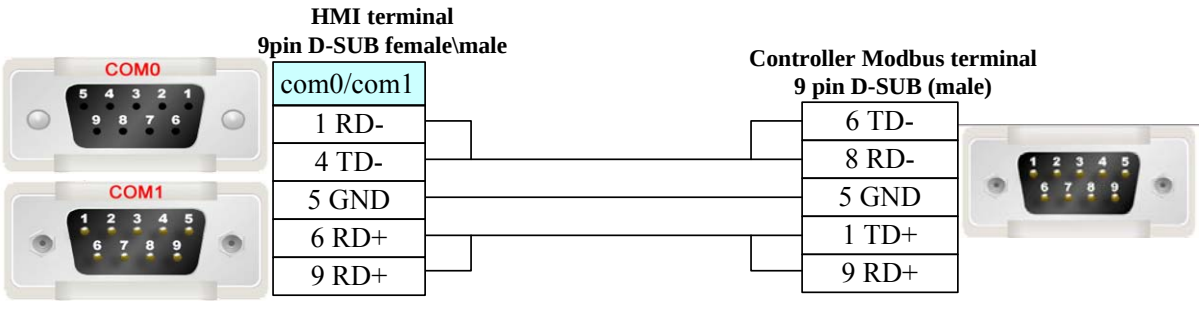
### RS232 communication cable




### RS485-4 communication cable




### RS485-2 communication cable




## 6.17 ENDA

## Serial Communication

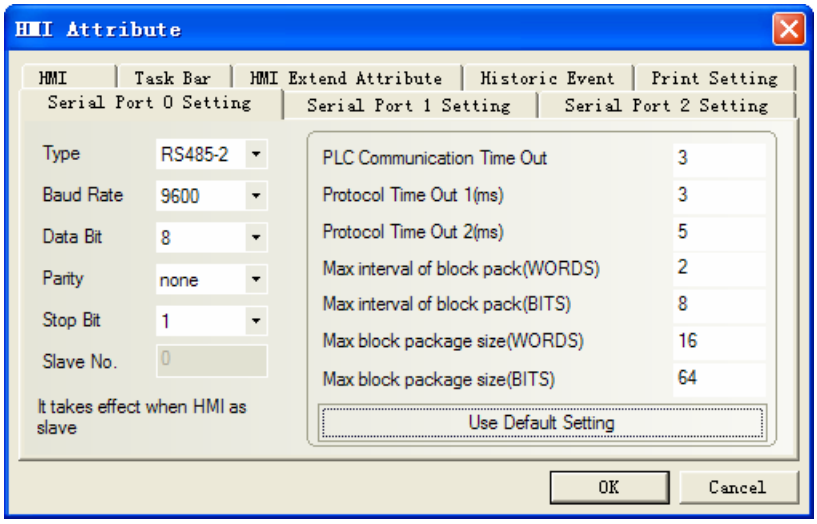
| Series | CPU | Link Module | Driver |
|---|---|---|---|
| ENDA devices | ELC | RS485-2 on the CPU unit | ENDA Controller/PLC Devices |
| | ETC | RS485-2 on the CPU unit | |
| | EUC | RS485-2 on the CPU unit | |
| | EPC | RS485-2 on the CPU unit | |
| | EDP | RS485-2 on the CPU unit | |

## System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| ENDA devices | ELC | RS485-2 on the CPU unit | RS485 | Setting | Your owner cable |
| | ETC | RS485-2 on the CPU unit | RS485 | | |
| | EUC | RS485-2 on the CPU unit | RS485 | | |
| | EPC | RS485-2 on the CPU unit | RS485 | | |
| | EDP | RS485-2 on the CPU unit | RS485 | | |

## Communication Setting

**ENDA Devices:**Default communication:9600, 8, 1, none; station： 1




## Supported Device

### ENDA PLC Devices

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Output Relay | MB 0-65535 | ------ | DDDDD | |
| Input Relay (read only) | IP 0-65535 | ------ | DDDDD | |
| Output Register | ------ | MW 0-65535 | DDDDD | |
| Input Register (read only) | ------ | IR 0-65535 | DDDDD | |

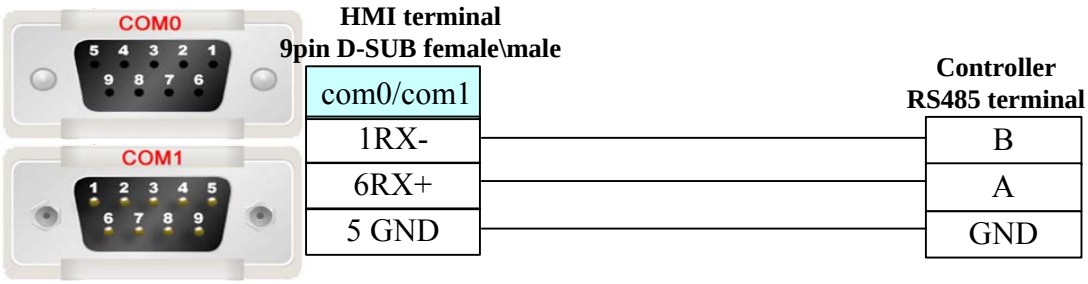
### ENDA Controller Devices

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Coils | Coils 0-65535 | ------ | DDDDD | |
| Discrete input (read only) | DI 0-65535 | ------ | DDDDD | |
| Holding Registers | ------ | HR 0-65535 | DDDDD | |
| Input Register (read only) | ------ | IR 0-65535 | DDDDD | |

## Cable Diagram

### RS485 communication cable




# 6.18 Emerson NetWork Power

## Serial Communication

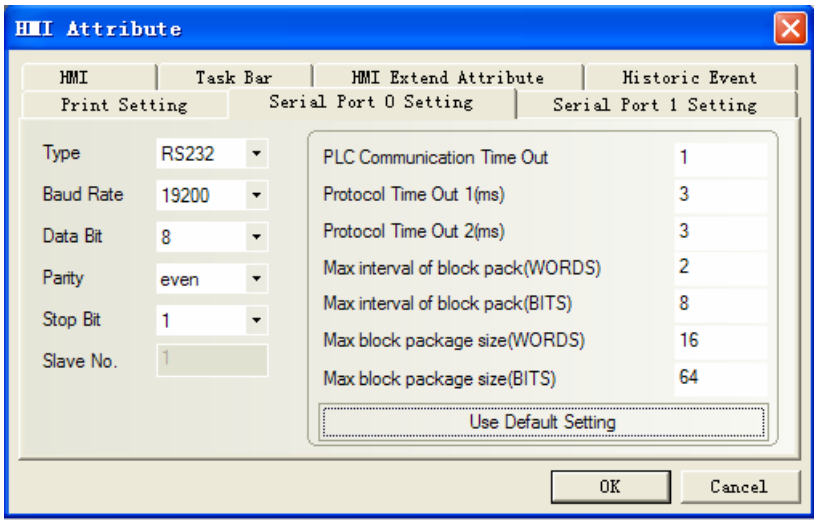
| Series | CPU | Link Module | Driver |
|---|---|---|---|
| Emerson Ec10 | Ec10-1006BRA | RS232 on the CPU unit | Emerson EC10 |
| Emerson Ec20 | Ec20-2012BRA<br>Ec20-3232BRA | RS232 on the CPU unit | Emerson EC20 |

## System configuration

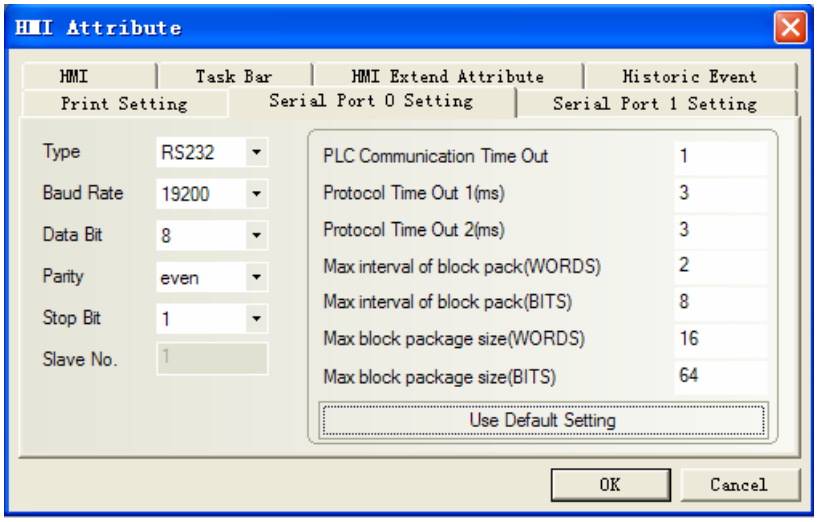
| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| Emerson Ec10 | Ec10-1006BRA | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 on port1 | RS485-2 | Setting | Your owner cable |
| Emerson Ec20 | Ec20-2012BRA | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 on port1 | RS485-2 | Setting | Your owner cable |
| | Ec20-3232BRA | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 on port1 | RS485-2 | Setting | Your owner cable |

## Communication Setting

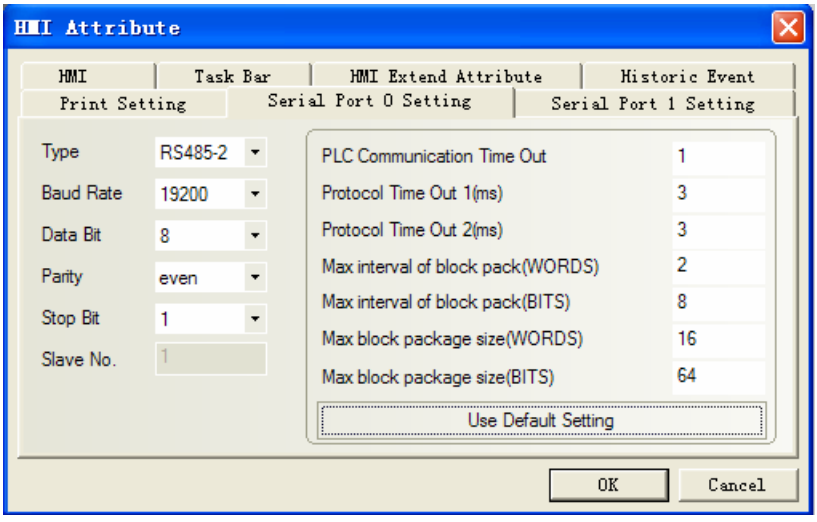
### Emerson Ec10 RS232 communication



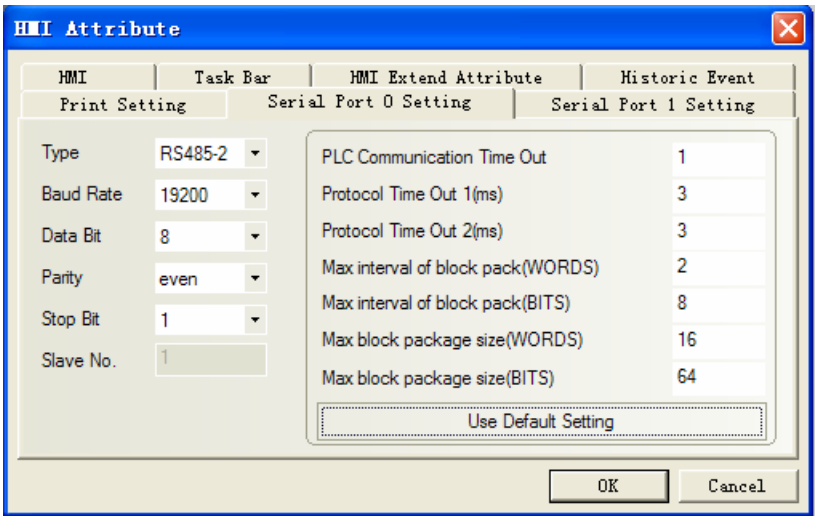

## Emerson Ec20 RS232 communication



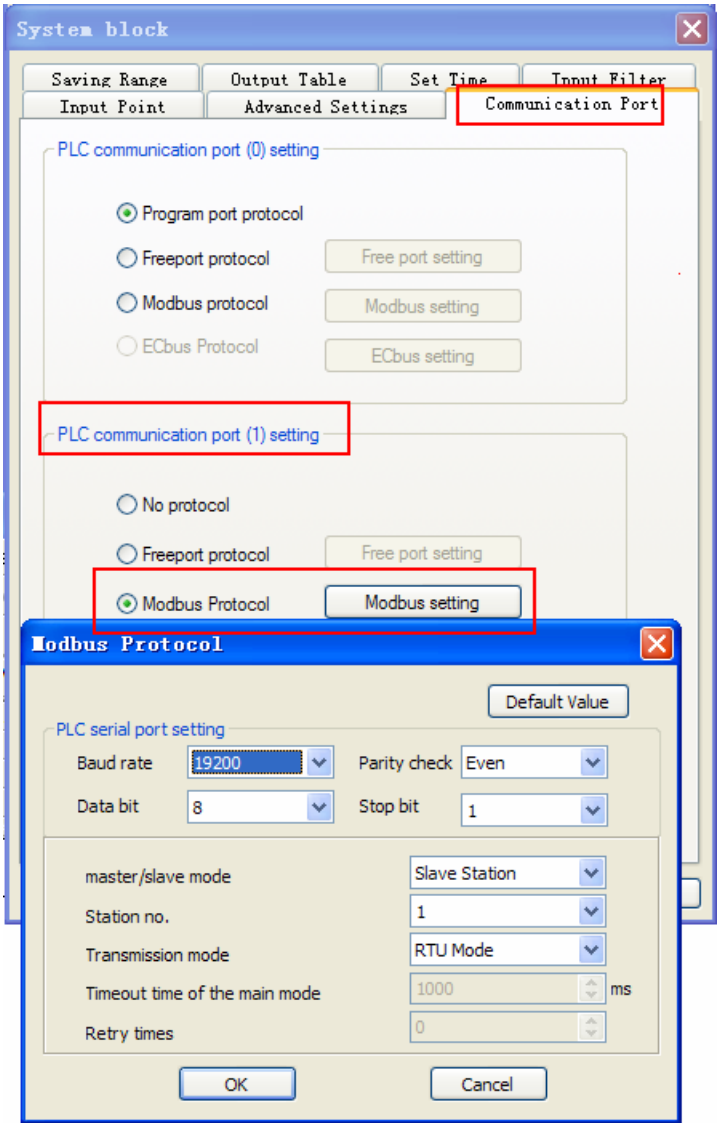

## Emerson Ec10 RS485-2 communication




## Emerson Ec20 RS485-2 communication




**Note:** Communication with port1, you must set the system configuration in the programming software first.




## Supported Device

### Emerson Ec10

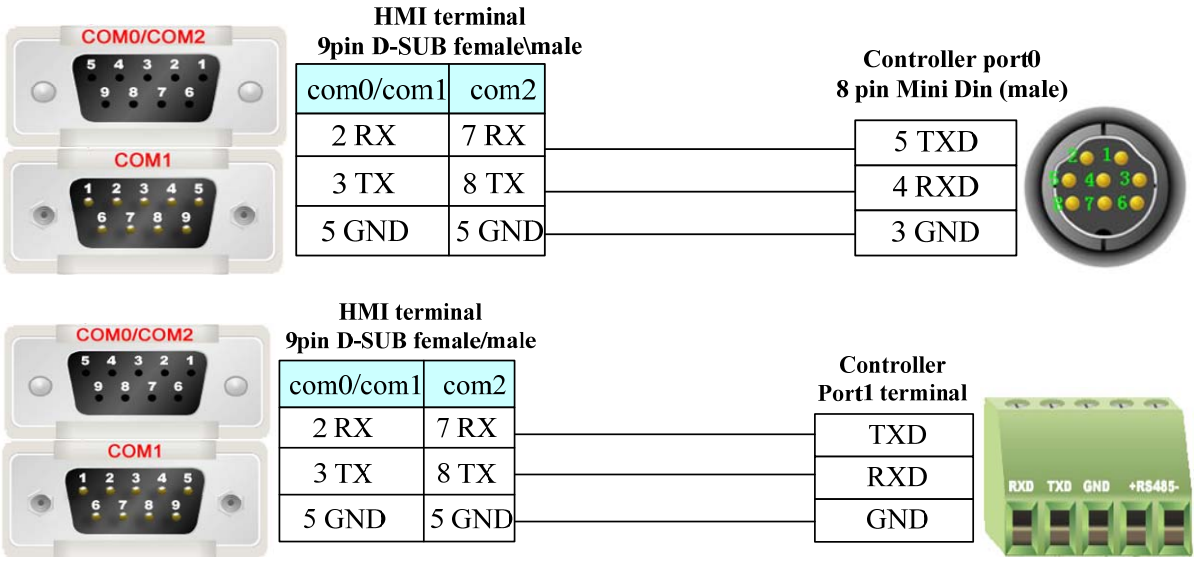
| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Output Relay | X000-377 | ------ | OOO | |
| Input Relay | Y000-377 | ------ | OOO | |
| Internal Relay | M0000-1999 | ------ | DDDD | |
| Special Relay | SM000-255 | ------ | DDD | |
| Step Relay | S000-991 | ------ | DDD | |
| Timer Relay | T000-255 | ------ | DDD | |
| Counter Relay | C000-255 | ------ | DDD | |
| Data register | ------ | D0000-7999 | DDDD | |
| Special Register | ------ | SD000-255 | DDD | |
| Index Register | ------ | Z00-15 | DD | |
| Timer | ------ | T000-255 | DDD | |
| Counter | ------ | C000-199 | DDD | |
| Counter(double word) | ------ | C_Double200-255 | DDD | |
| Data register(double word) | ------ | D_Double0000-7999 | DDDD | |
| Special Register(double word) | ------ | SD_Double000-127 | DDD | |

### Emerson Ec20

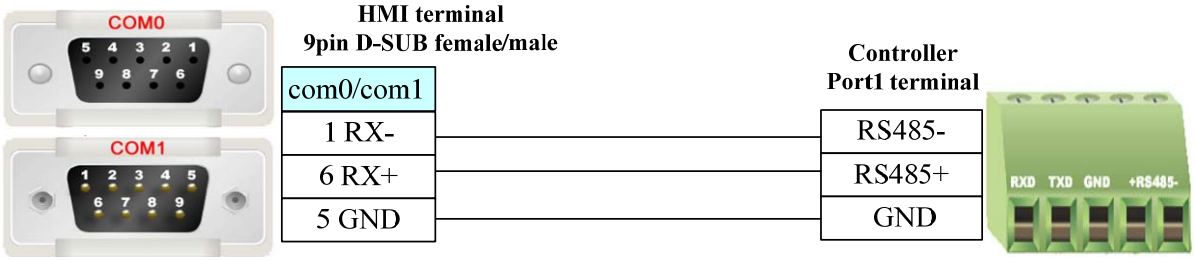
| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Output Relay | X000-377 | ------ | OOO | |
| Input Relay | Y000-377 | ------ | OOO | |
| Internal Relay | M0000-1999 | ------ | DDDD | |
| Special Relay | SM000-255 | ------ | DDD | |
| Step Relay | S000-991 | ------ | DDD | |
| Timer | T000-255 | ------ | DDD | |
| Counter | C000-255 | ------ | DDD | |
| Data register | ------ | D0000-7999 | DDDD | |
| Special Register | ------ | SD000-255 | DDD | |
| Index Register | ------ | Z00-15 | DD | |
| Timer | ------ | T000-255 | DDD | |
| Counter | ------ | C000-199 | DDD | |
| Counter(double word) | ------ | C_Double200-255 | DDD | |
| Data register(double word) | ------ | D_Double0000-7999 | DDDD | |
| Special Register(double word) | ------ | SD_Double000-125 | DDD | |

## Cable Diagram

### Emerson RS232 communication




## Emerson RS485-2 communication




# 6.19 Epower

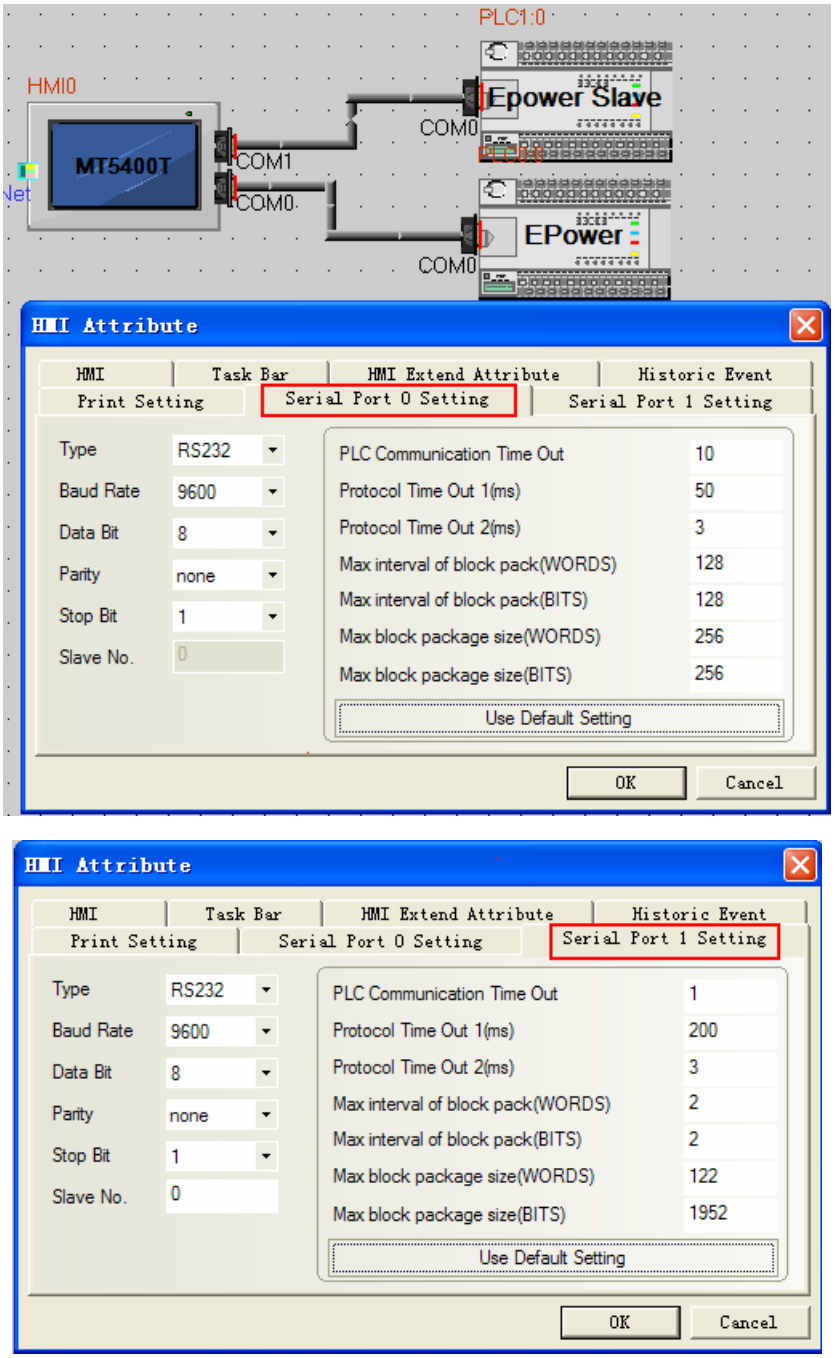
## Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| Epower | Epower | CPU Direct | EPower |
| | | | Epower Slave |

## System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| Epower | Epower | CPU Direct | RS232 | Setting | Your owner cable |
| | | | | Setting | Your owner cable |

## Communication Setting




## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| UPSSet | UPSSet1-6 | ------ | DDDDD | |
| UPSPanel | UPSPanel0-9 | ------ | DDDDD | |
| UPSData | ------ | UPSData0-70 | DDDD | |
| UPSDisp | ------ | UPSDisp0 | DDDDD | |
| UPSCommand | ------ | UPSCommand0-52 | DDDDD | |
| UPSText | ------ | UPSText0-1 | DDDDD | |

**Slave driver notes：**

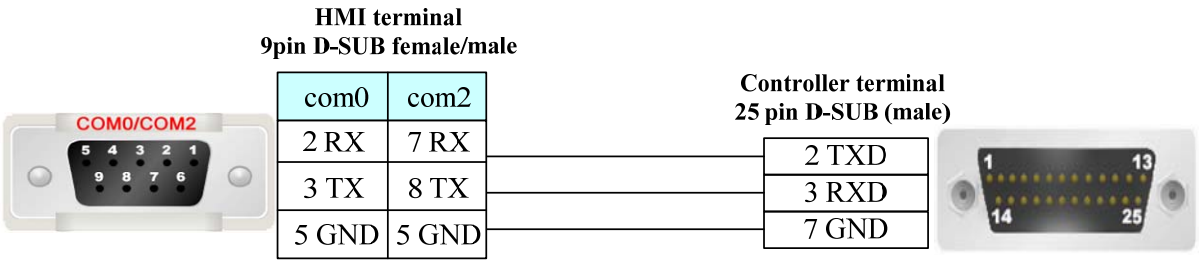
1. Transmit the device value to LW, LB by timer; refer to the addr table for details.
2. UPSCommand must use with UPSSet、macro；
3. UPSDisp must use with UPStexr、UPSPanel、macro.

**Epower HMI project notes：**

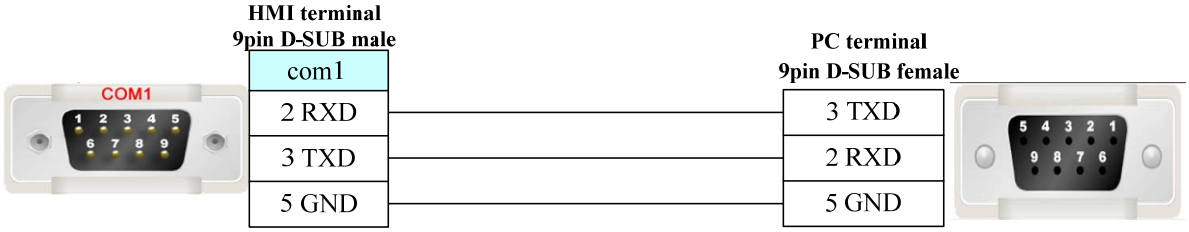
1. The project must have UPSData0 device, otherwise the data accuracy will be affected; Suggest to put UPSData0 device in the public window.
2. LW.B indicates the bits of UPSData

## Cable Diagram

### COM0 connect to ups communication board




### COM1 connect to King software or comdebug tool




## 6.20 eView Master & Eview Slave(Master/Slave Protocol Connection)

### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| Eview Master | | | Eview Master |
| Eview Slave | | | Eview Slave |

### System configuration

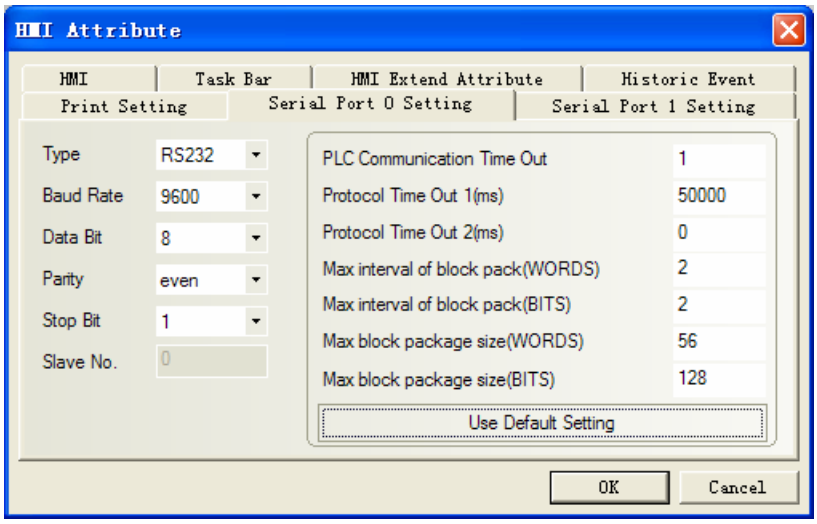
| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| Eview Master | | | | Setting | Your owner cable |
| Eview Slave | | | | Setting | Your owner cable |

### Supported Device

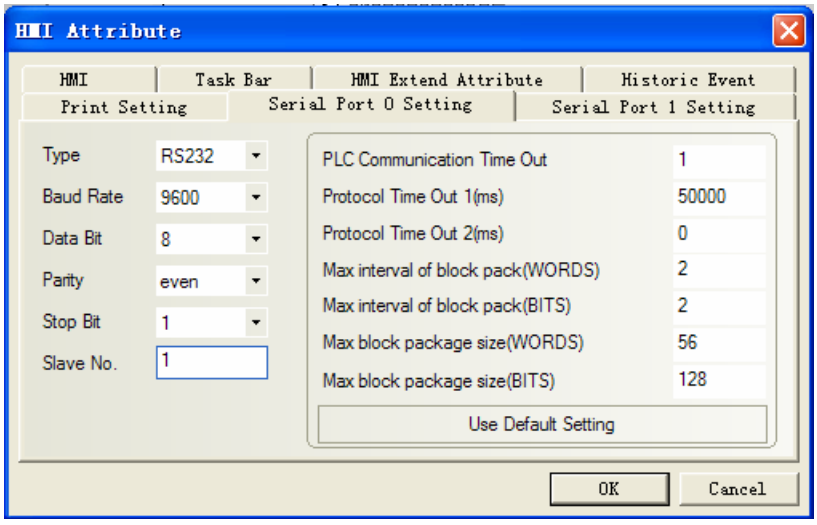
| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| | B0 - 8999 | ------ | DDDD | |
| | ------ | W0 - 8999 | DDDD | |

## Communication Setting

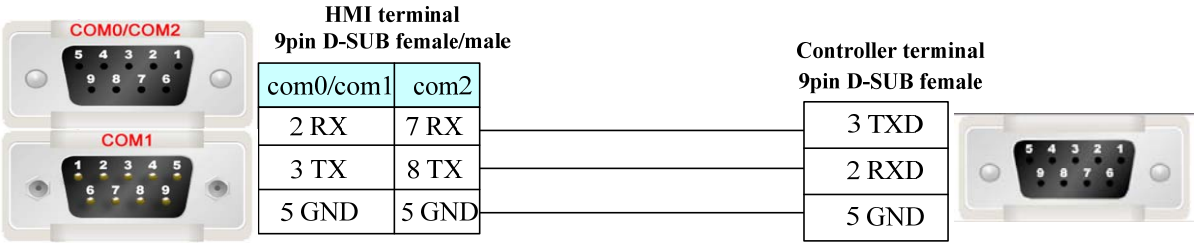
### EVIEW MASTER




### EVIEW SLAVE




## Cable Diagram



## 6.21 Facon Corporation

### Serial Communication

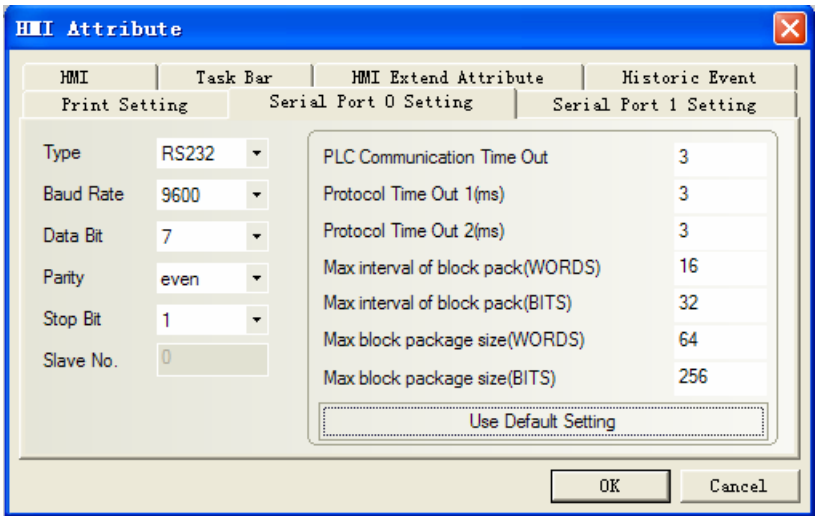
| c | CPU | Link Module | | Driver |
|---|---|---|---|---|
| FBs | FBs-10MA/MC<br>FBs-14MA/MC<br>FBs-20MA/MC<br>FBs-24MA/MC<br>FBs-32MA/MC<br>FBs-40MA/MC<br>FBs-60MA/MC<br>FBs-20MN<br>FBs-32MN<br>FBs-44MN | RS232 on the CPU unit | Port 0 | Facon FB<br>Modbus RTU |
| | | FBS-CB25-3 | Port 1 | |
| | | | Port 2 | |
| | | | | |
| FBe/FBn | FBe-20MA<br>FBe-28MA<br>FBe-40MA | CPU unit | Port 0 | |
| | FBe-20MC<br>FBe-28MC<br>FBe-40MC | CPU unit | Port 0 | |
| | | | Port 1 | |
| | | | Port 2 | |
| | FBn-19MCT<br>FBn-26MCT<br>FBn-36MCT | FB-DTBR | | |
| | | FB-DTBR-E | | |

### System configuration

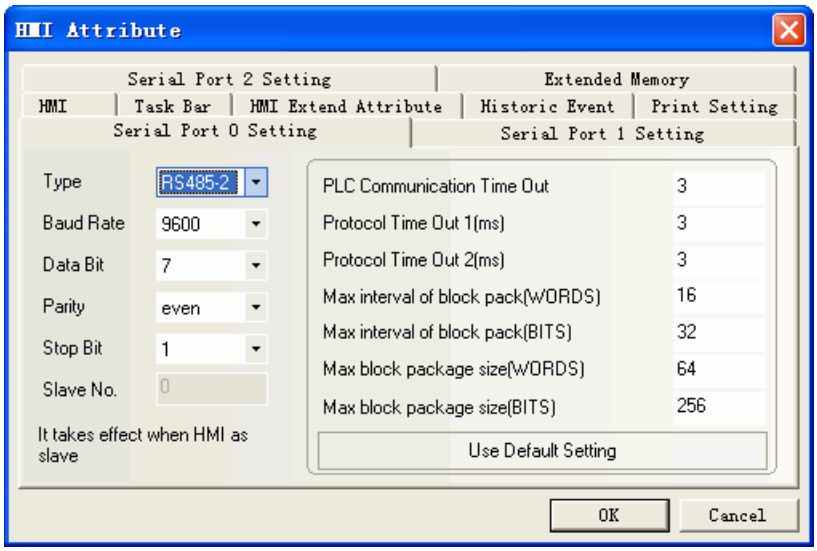
| Driver | Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|---|
| FACON FB | FB MA<br>FB MC | FBs-20MAT | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | | FBS-CB25-3 | RS232 | Setting | Your owner cable |
| | | | | RS485 | Setting | Your owner cable |
| Modbus RTU | FB MA<br>FB MC | FBs-20MAT | FBS-CB25-3 | RS232 | Setting | Your owner cable |
| | | | | RS485 | Setting | Your owner cable |

### Communication Setting

#### FACON FB RS232 communication

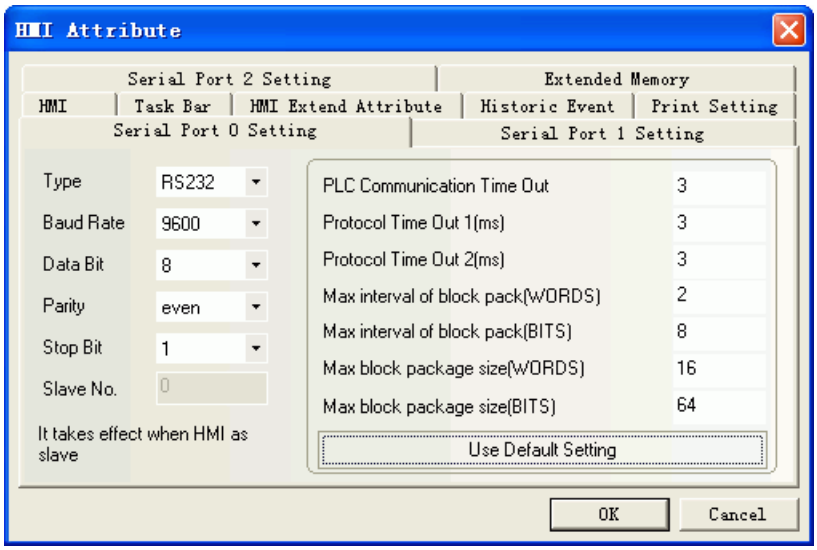



## FBS-CB25-3 module RS485 communication

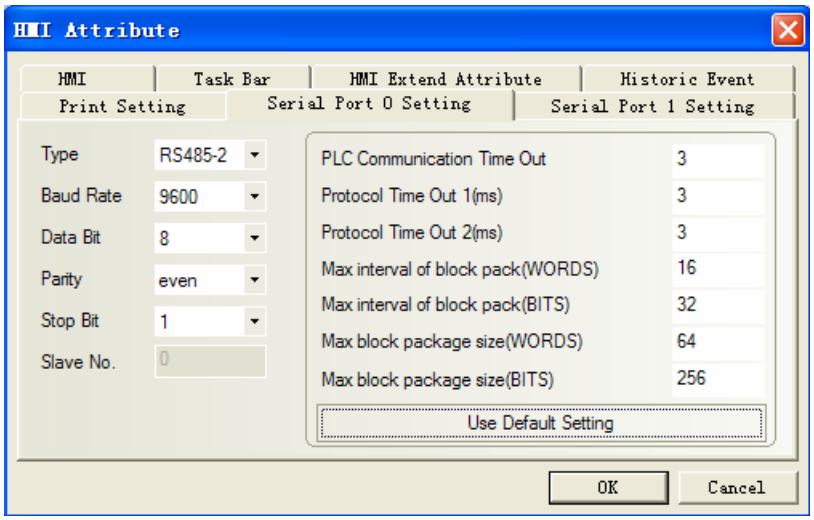



## FBS-CB25-3 module communication

## Modbus RTU RS232 communication




## Modbus RTU RS485-2 communication




**Note:** The detailed communication configuration must be the same as the PLC's port setting.

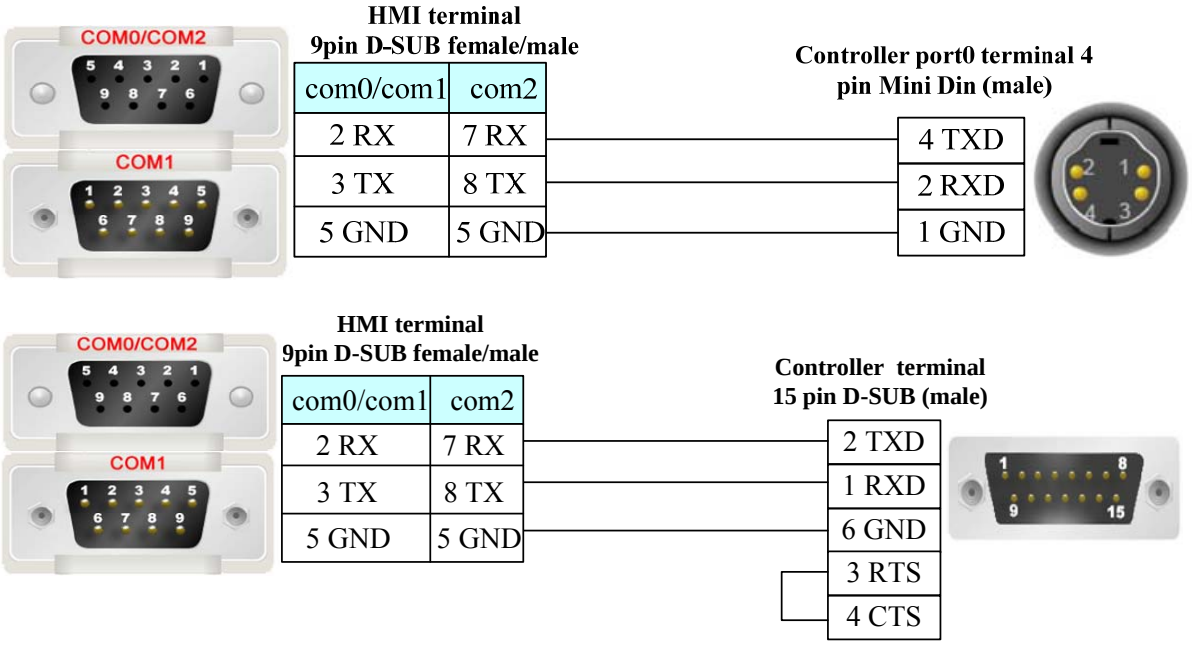
## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Input | X0-9999 | ------ | DDDD | |
| Output | Y0-9999 | ------ | DDDD | |
| Internal Relay | M0-9999 | ------ | DDDD | |
| Step Relay | S0-9999 | ------ | DDDD | |
| Timer Relay | T0-9999 | ------ | DDDD | |
| Counter Relay | C0-9999 | ------ | DDDD | |
| Data Register | ------ | HR0-9999 | DDDD | |
| Data Register | ------ | DR0-9999 | DDDD | |
| Timer | ------ | TMR0-9999 | DDDD | |
| Counter | ------ | CTR0-199 | DDD | |
| Double word Counter Register | ------ | DRC200-255 | DDD | |

**Note**：HR register corresponds to the "R" register of the PLC;
DR register corresponds to the "D" register of the PLC;
TMR register corresponds to the "T" register of the PLC;
CTR register corresponds to the "C" register of the PLC;
DRC register corresponds to the "C(32)" register of the PLC，e.g.：DRC200==C200

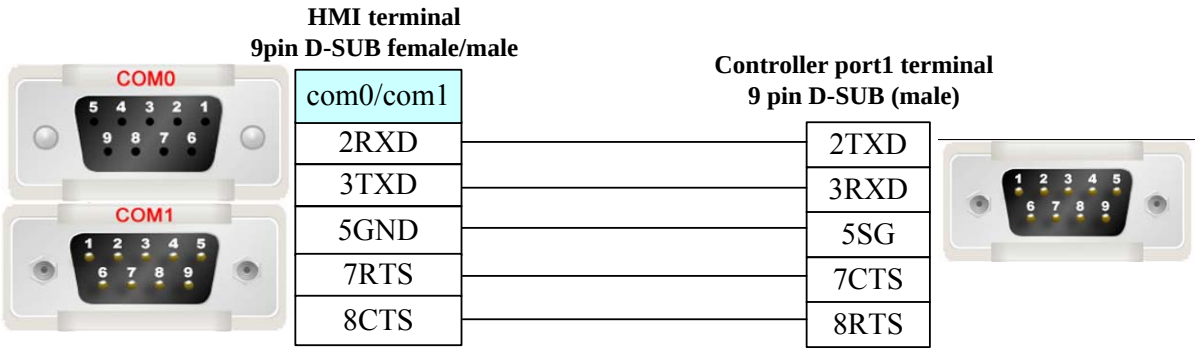
## Cable Diagram

### FB RS232 communication cable

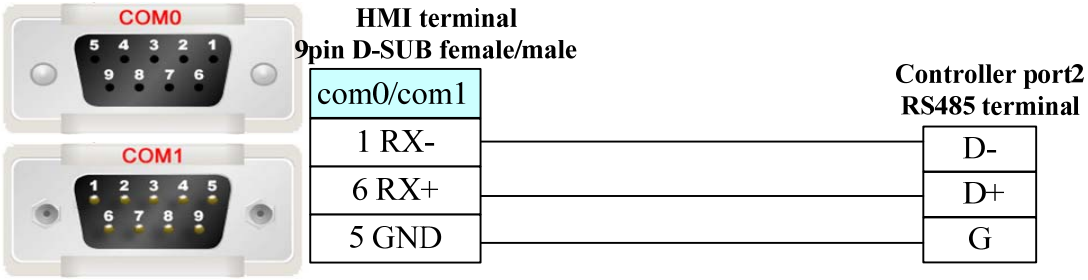



## FBS-CB25-3 module communication

### RS232 communication cable




### RS485 communication cable




# 6.22 Fuji SPB

## Serial Communication

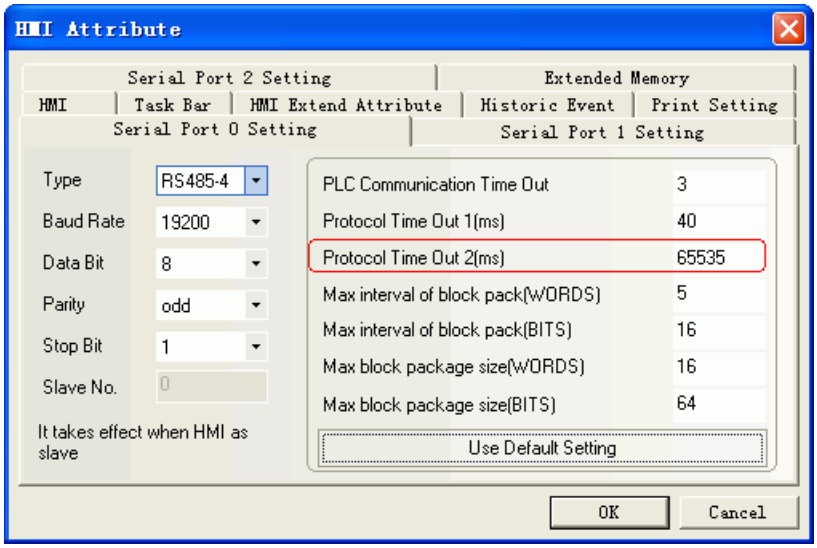
| Series | CPU | Link Module | Driver |
|---|---|---|---|
| SPB | NW0P20T-31 | RS485 interface on the CPU | Fuji SPB |

| | | | |
|---|---|---|---|
| NB | NB2U24R-11 | RS485 interface on the CPU | |

## System configuration

| Series | CPU | Link Module | Ethernet Type | Parameter | Cable |
|---|---|---|---|---|---|
| SPB | NW0P20T-31 | RS485 interface on the CPU | RS485-4 | Setting | Your owner cable |
| NB | NB2U24R-11 | RS485 interface on the CPU | RS485-4 | | |

## Communication Setting




**Note：** When PLC is protected by password, protocol time out 2 is 65535, and the register is read only. If you want to make the register writable, you must let the protocol time out 2 equal the PLC password.

Example: PLC password is 1234, and then you make the protocol time out 2 to be 1234.

PLC password is 0010, and then you make the protocol time out 2 to be 10.

## Supported Device

### SPB

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Data register | D 0~6FF.F | ------ | HHH.H | |
| Special relay | M_special 0~1FF | ------ | HHH | |
| Counter contact | C 0~FF | ------ | HH | |
| Timer contact | T 0~1FF | ------ | HHH | |
| Keep relay | L 0~FFF | ------ | HHH | |
| Auxiliary relay | M 0~FFF | ------ | HHH | |
| Output relay | Y 0~3FF | ------ | HHH | |
| Input relay | X 0~3FF | ------ | HHH | |
| Timer contact | ------ | TW 0~3FF | HHH | |
| Counter contac | ------ | CW 0~FF | HH | |

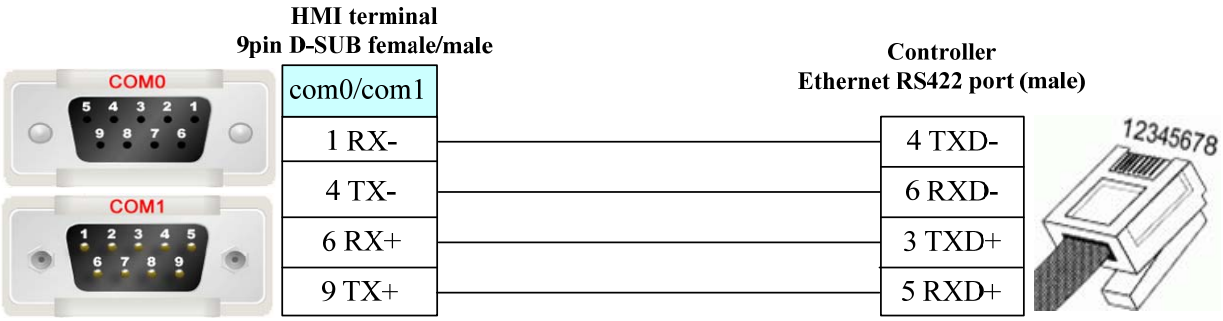
| | | | | |
|---|---|---|---|---|
| Data register | ------ | DW 0~6FF | HHH | |
| Special register | ------ | DW_special 0~1FF | HHH | |
| Link register(0 slot) | ------ | W0 0~7FF | HH | |
| Link register(1 slot) | ------ | W1 0~7FF | HHH | |
| Link register(2 slot) | ------ | W2 0~7FF | HHH | |
| Link register(3 slot) | ------ | W3 0~7FF | HHH | |
| Link register(4 slot) | ------ | W4 0~7FF | HHH | |
| Link register(5 slot) | ------ | W5 0~7FF | HHH | |
| Link register(6 slot) | ------ | W6 0~7FF | HHH | |
| Link register(7 slot) | ------ | W7 0~7FF | HHH | |

**Note:** M_special address: 8000 in the PLC corresponds to 0 in the HMI.
DW_special address: 8000 in the PLC corresponds to 0 in the HMI.

## NB

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Data register | D 0~3F.F | ------ | HHH.H | |
| Special relay | M_special 0~1FF | ------ | HHH | |
| Counter contact | C 0~1F | ------ | HH | |
| Timer contact | T 0~1F | ------ | HHH | |
| Keep relay | L 0~1FF | ------ | HHH | |
| Auxiliary relay | M 0~3FF | ------ | HHH | |
| Output relay | Y 0~3F | ------ | HHH | |
| Input relay | X 0~3F | ------ | HHH | Read only |
| Timer contact | ------ | TW 0~1F | HHH | |
| Counter contact | ------ | CW 0~1F | HH | |
| Data register | ------ | DW 0~3F | HHH | |
| Special register | ------ | DW_special 0~1FF | HHH | |

## Cable Diagram



## 6.23 GE Fanuc Automation Inc.

### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| GE Fanuc Series 90-30 | IC693CPU311<br>IC693CPU313<br>IC693CPU321<br>IC693CPU323<br>IC693CPU331<br>IC693CPU340<br>IC693CPU341<br>IC693CPU350<br>IC693CPU351<br>IC693CPU352<br>IC693CPU360<br>IC693CPU363<br>IC693CPU364<br>IC693CPU374<br>IC693CSE311<br>IC693CSE313<br>IC693CSE323<br>IC693CSE331<br>IC693CSE340 | Serial Connector on Power Supply | GE Fanuc Series SNP |
| | IC693CPU311<br>IC693CPU313<br>IC693CPU321<br>IC693CPU323<br>IC693CPU331<br>IC693CPU340<br>IC693CPU341<br>IC693CPU350<br>IC693CPU360<br>IC693CPU364 | Connector on Power Supply | GE SNP-X |
| | | IC693CMM311 | |
| | IC693CPU351<br>IC693CPU352<br>IC693CPU363 | Connector on Power Supply | |
| | | Port1 on CPU unit | |
| | | Port2 on CPU unit | |
| | | IC693CMM311 | |
| | IC693CPU374 | Port on Power Supply | |
| | | IC693CMM311 | |
| VersaMax Series | CPU001/002/005<br>CPUE05 | RS232 on port1 | |
| | | RS485 on port2 | |

| | | | |
|---|---|---|---|
| VersaMax Micro & Nano Series | IC200UAL004/005/006<br>IC200UDD110/120/212<br>IC200UDR005/006/010<br>IC200UAA007<br>IC200UAR028 | RS232 on port1 | |
| | | RS485 on port2 | |

## Network communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| Series 90-30 | CPU311<br>CPU313<br>CPU323<br>CPU331<br>CPU340<br>CPU341<br>CPU350<br>CPU351<br>CPU352<br>CPU360<br>CPU363<br>CSE311<br>CSE313<br>CSE323<br>CSE331<br>CSE340 | IC693CMM321 | Modbus TCP |
| | CPU364<br>CPU374 | Ethernet interface on CPU | |
| Series 90-70 | CPU731<br>CPU771<br>CPU772<br>CPU780<br>CPU781<br>CPU782<br>CPU788<br>CPU789<br>CPM790<br>CPM915<br>CPM925<br>CSE784<br>CSE924<br>CSE925 | IC697CMM742 (Type2) | |

| | | | |
|---|---|---|---|
| | CPX935<br>CGR772<br>CGR935 | | |
| PACSystem RX7i | CPE010<br>CPE020<br>CRE020 | Ethernet interface on CPU | |

## Serial System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| GE Fanuc Series 90-30 | IC693CPU374 | RS485 on the CPU unit | RS232 | Setting | Your owner cable |
| | | | RS485-4 | Setting | Your owner cable |
| | | IC693CMM311 | RS232 | Setting | Your owner cable |
| | | | RS485-4 | Setting | Your owner cable |
| VersaMax Series | CPU001/002/005<br>CPUE05 | RS232 on port1 | RS232 | Setting | Your owner cable |
| | | RS485 on port2 | RS485-4 | Setting | Your owner cable |
| VersaMax Micro & Nano Series | IC200UAL004/005/006<br>IC200UDD110/120/212<br>IC200UDR005/006/010<br>IC200UAA007<br>IC200UAR028 | RS232 on port1 | RS232 | Setting | Your owner cable |
| | | RS485 on port2 | RS485-4 | Setting | Your owner cable |

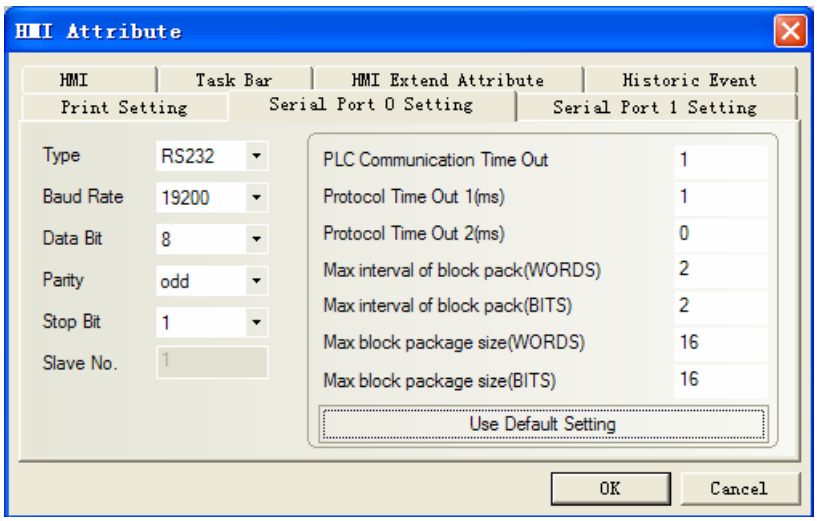
## Network System configuration

| Series | CPU | Link Module | Connect Type | Parameter | Cable |
|---|---|---|---|---|---|
| Series 90-30 | CPU311<br>CPU313<br>CPU323<br>CPU331<br>CPU340<br>CPU341<br>CPU350<br>CPU351<br>CPU352<br>CPU360<br>CPU363 | IC693CMM321 | Ethernet | Setting | Your owner cable |

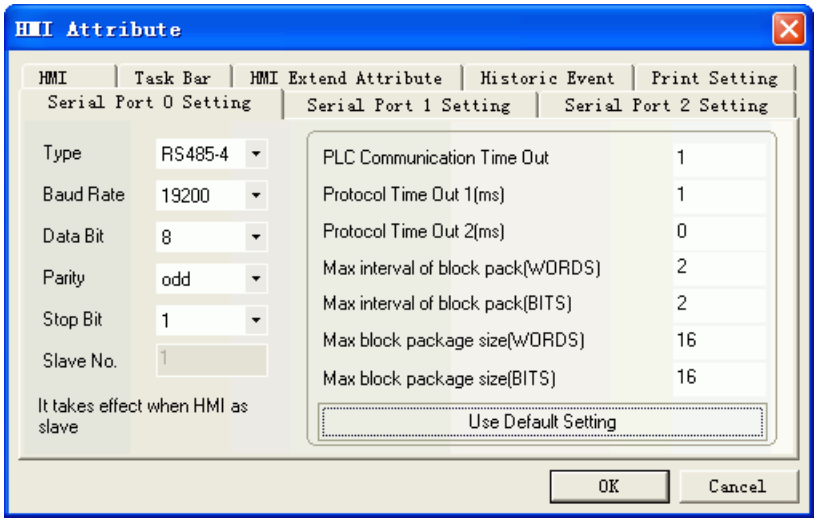
| | | | | | |
|---|---|---|---|---|---|
| | CSE323<br>CSE331<br>CSE340 | | | | |
| | CPU364<br>CPU374 | Ethernet interface on CPU | | | |
| Series 90-70 | CPU731<br>CPU771<br>CPU772<br>CPU780<br>CPU781<br>CPU782<br>CPU788<br>CPU789<br>CPM790<br>CPM915<br>CPM925<br>CSE784<br>CSE924<br>CSE925<br>CPX772<br>CPX782<br>CPX928<br>CPX935<br>CGR772<br>CGR935 | IC697CMM742 (Type2) | | | |
| PACSystem RX7i | CPE010<br>CPE020<br>CRE020 | Ethernet interface on CPU | | | |

## Serial Communication Setting

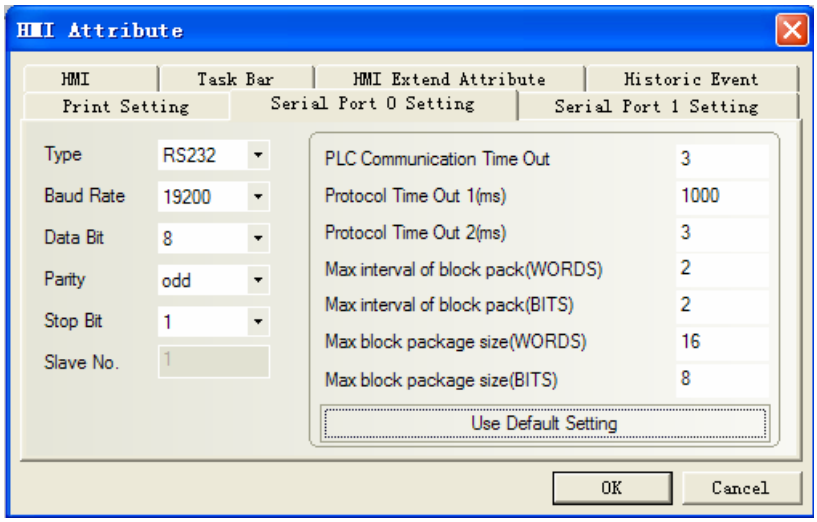
### GE Fanuc Series SNP RS232 Communication



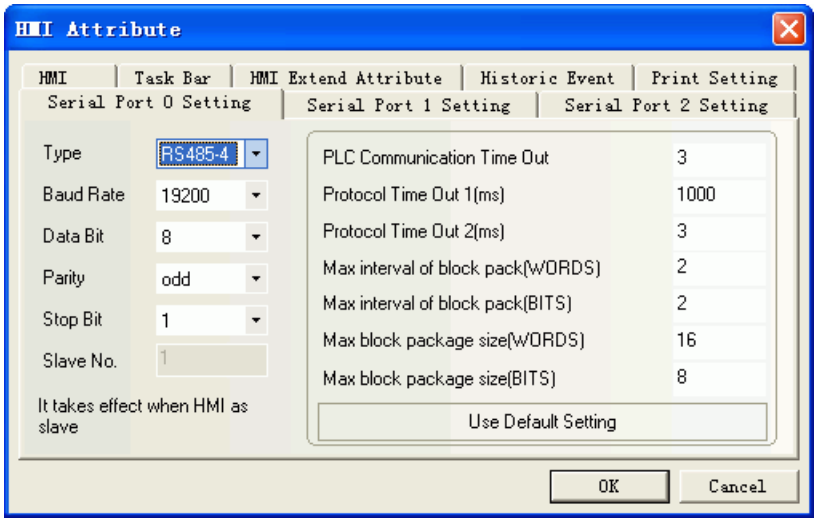
## GE Fanuc Series SNP RS422 Communication



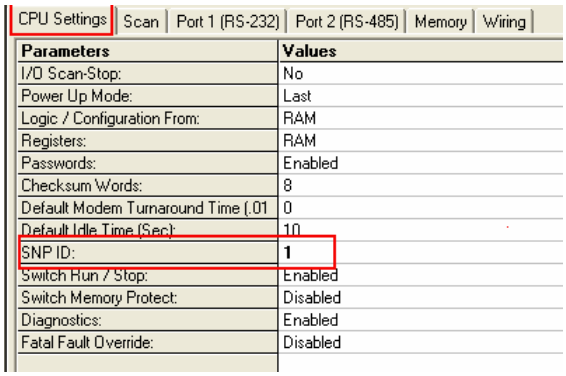

## GE SNP-X Protocol RS232 Communication

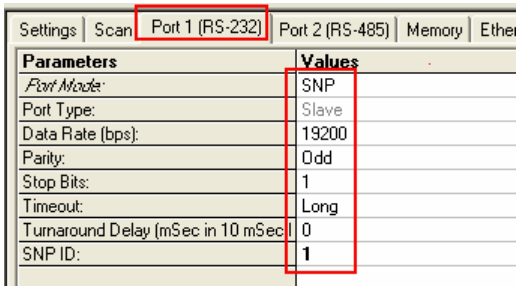



## GE SNP-X Protocol RS422 Communication



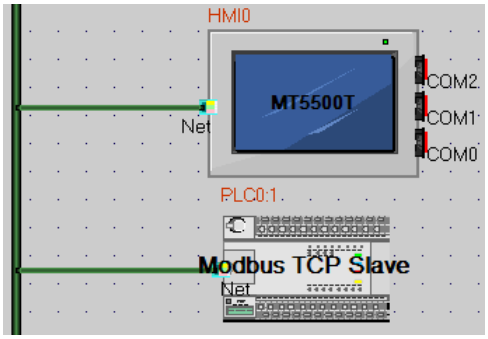
**Note:** Set matching communication parameter in the Programming software.

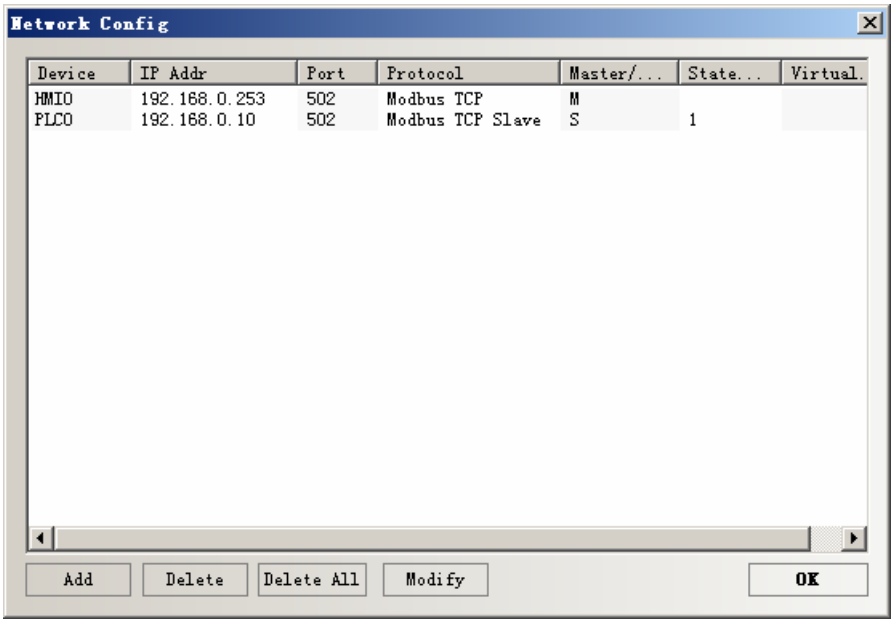


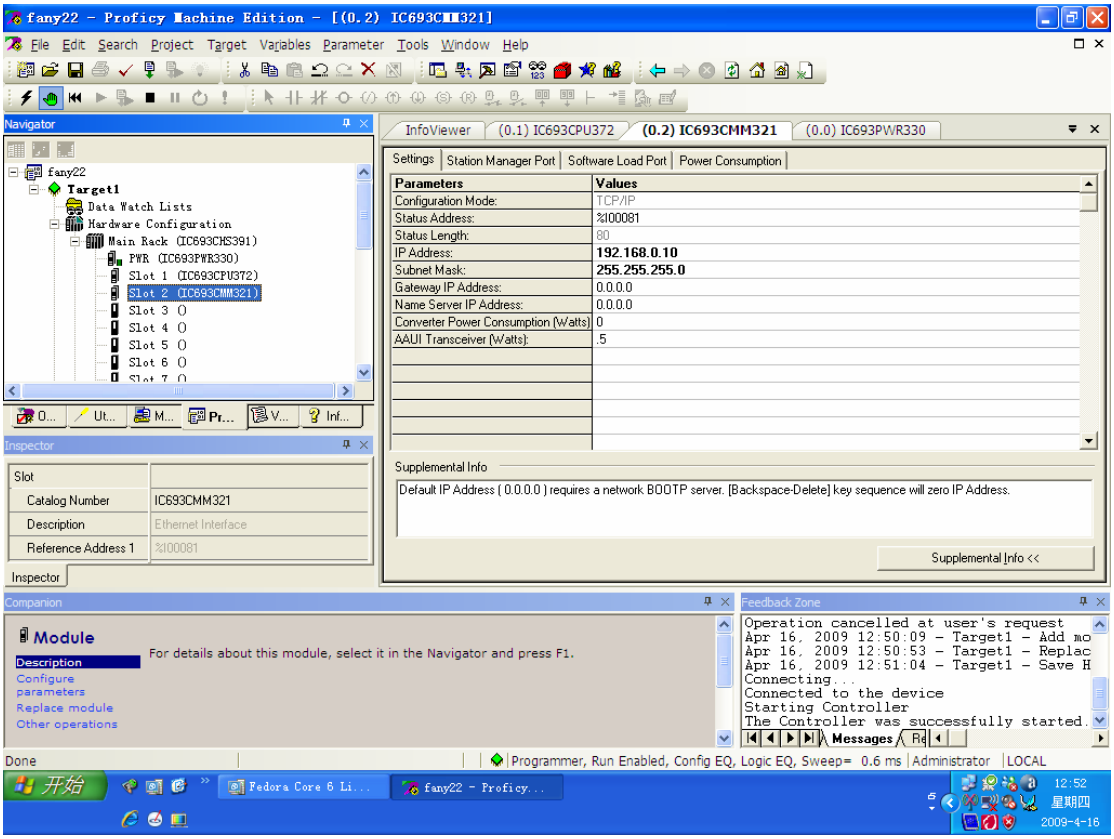

## Network Communication Setting

HMI：




PLC:




# Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| System | SC01-32 | ------ | DD | |
| System | SB01-32 | ------ | DD | |
| System | SA01-32 | ------ | DD | |
| System | S01-32 | ------ | DD | |
| Temporary | T001-256 | ------ | DDD | |
| Internal | M0001-4096 | ------ | DDDD | |
| Genius Global | G0001-1280 | ------ | DDDD | |
| Output | Q0001-2048 | ------ | DDDD | |
| Input | I001-256 | ------ | DDD | |
| Analog Output | ------ | AQ001-512 | DDD | |
| Analog Input | ------ | AI0001-2048 | DDDD | |
| Register | ------ | R0001-9999 | DDDD | |

**Address correspondence between modbus**

Faults | Port 1 | Port 2 | Scan Sets | Modbus TCP Address Map | Power Consumption

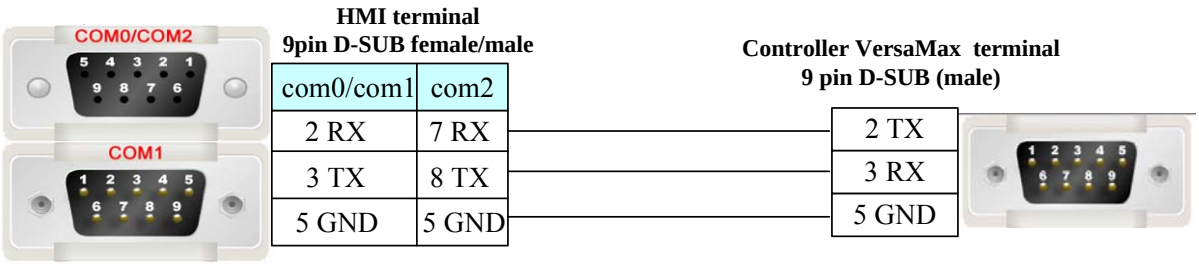
| Modbus Register | Start Address | End Address | PLC Memory Address | Length |
|---|---|---|---|---|
| 0xxxx - Coil Table | 1 | 32768 | %Q00001 | 32768 |
| 1xxxx - Discrete Inputs Table | 1 | 32768 | %I00001 | 32768 |
| 3xxxx - Input Register Table | 1 | 64 | %AI00001 | 64 |
| 4xxxx - Holding Register Table | 1 | 1024 | %R00001 | 1024 |
| 6yxxxx - Internal Tables | 0 | 0 | %W00001 | 0 |

# Cable Diagram

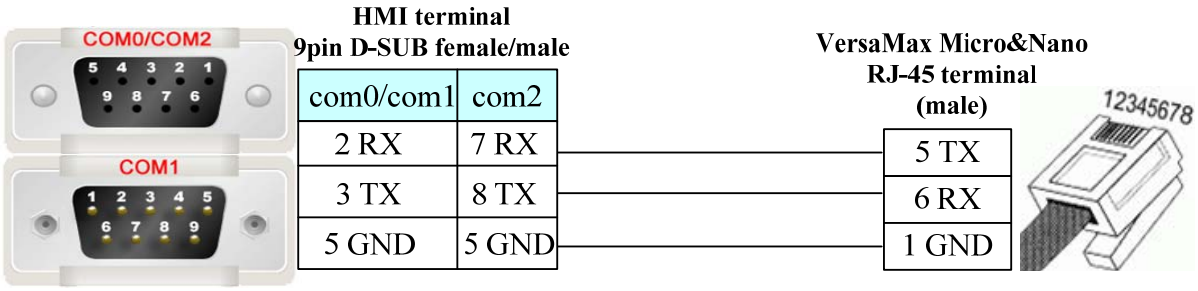
## GE Fanuc Series SNP RS232 communication

The communication cable recommended by GE Fanuc Automation

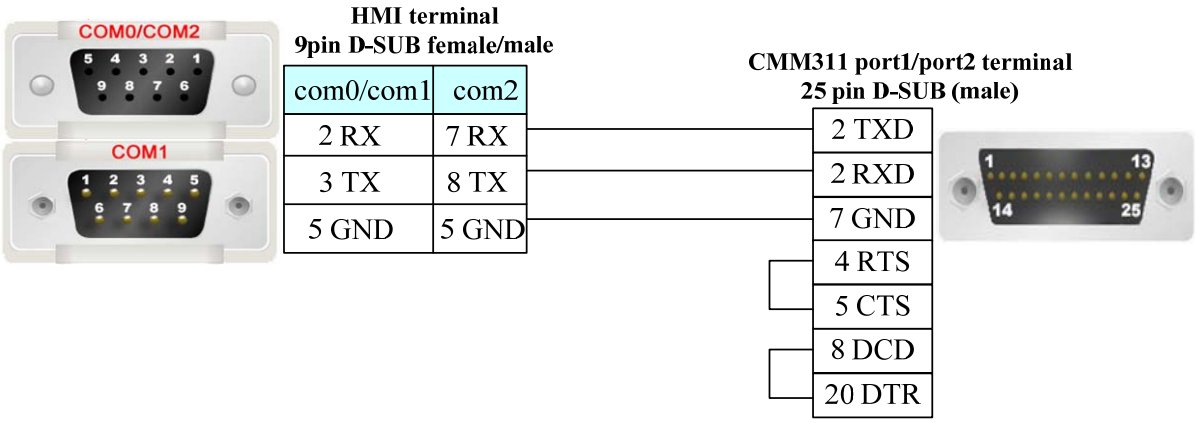
## VersaMax series RS232 communication



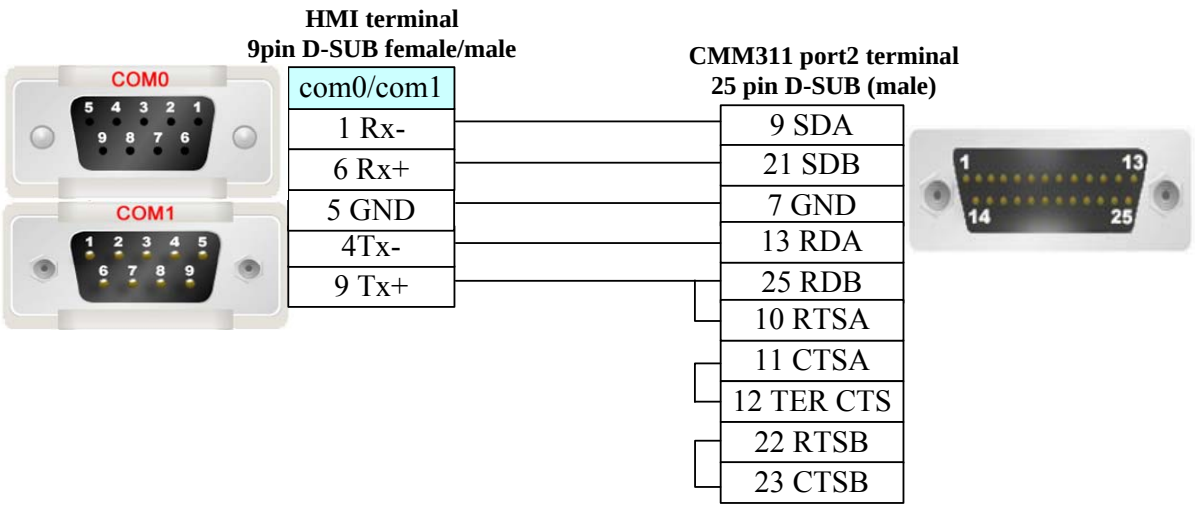

## VersaMax Micro & Nano Series RS232 communication



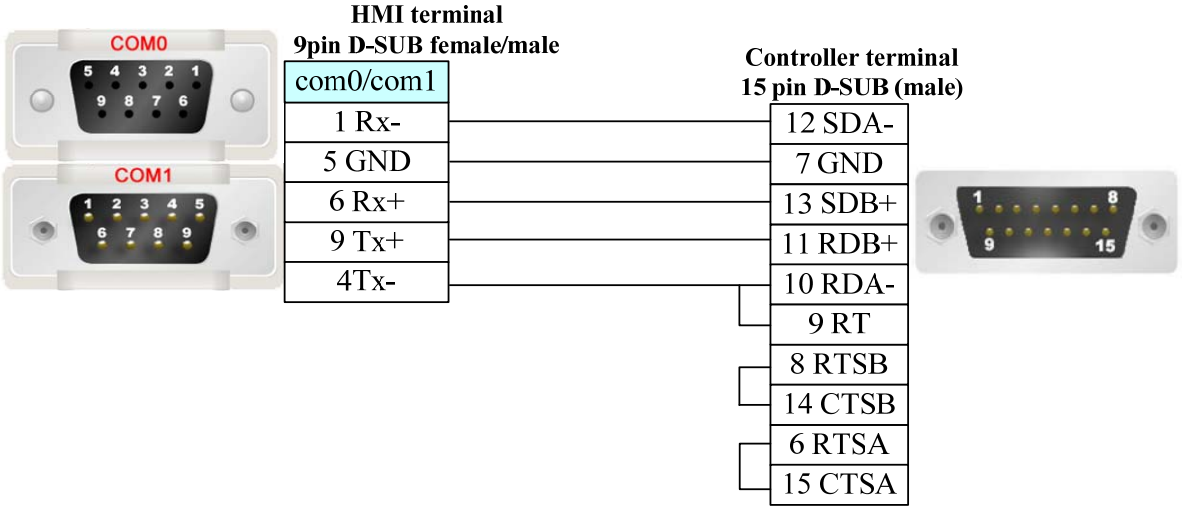

## CMM311 RS232 communication




## CMM311 RS422 communication



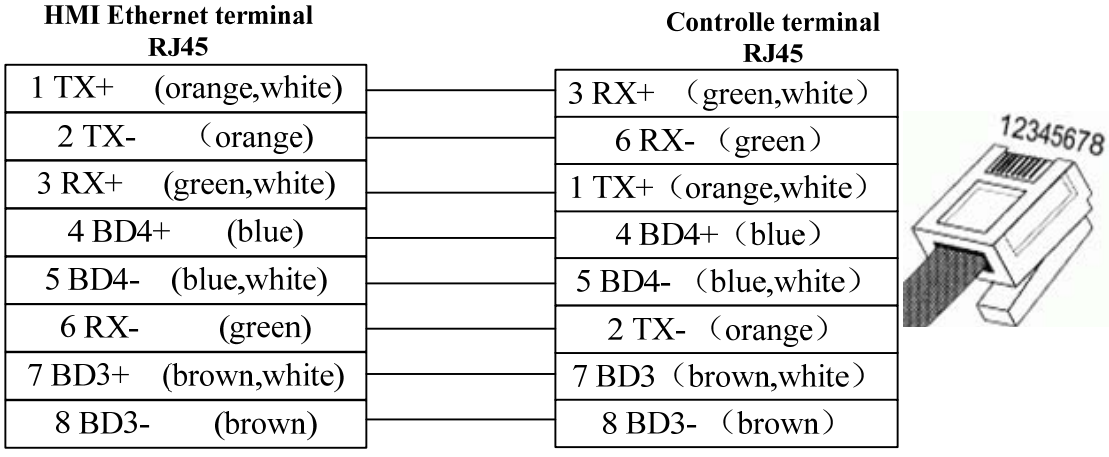

## 90-30/VersaMax RS422 communication




## Ethernet communication protocol cable

Cross-connection or crossover network cable can be used as communication cable via the hub

a. Cross-connection cable diagram:




b. crossover network cable diagram:

| HMI Ethernet terminal RJ45 | Ethernet Hub or Switch RJ45 |
|---|---|
| 1 TX+ (orange,white) | 1 RX+（orange,white） |
| 2 TX- （orange) | 2 RX- （orange） |
| 3 RX+ (green,white) | 3 TX+ （green,white） |
| 4 BD4+ (blue) | 4 BD4+ （blue） |
| 5 BD4- (blue,white) | 5 BD4- （blue,white） |
| 6 RX- (green) | 6 TX- （green） |
| 7 BD3+ (brown,white) | 7 BD3（brown,white） |
| 8 BD3- (brown) | 8 BD3- （brown） |

## 6.24 HAIWELL

### Serial Communication

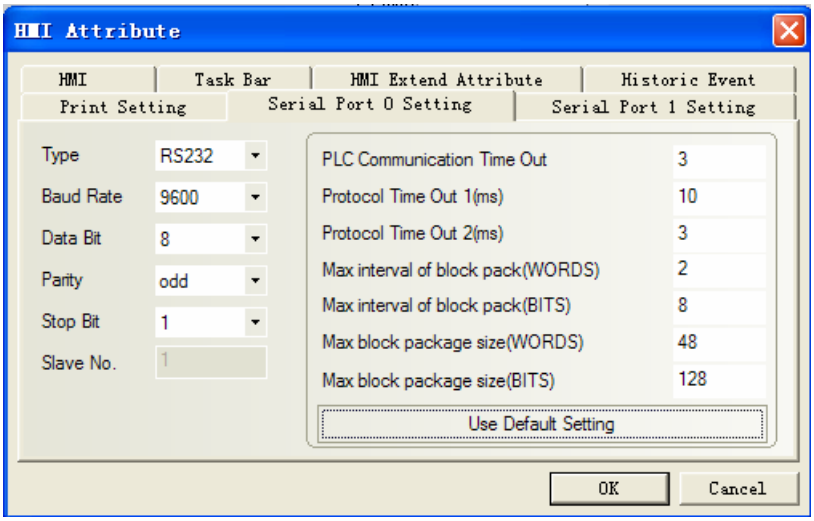
| Series | CPU | Link Module | Driver |
|---|---|---|---|
| E/S | HW-S16ZA220R | RS232 on com1 | Haiwell |
| | | RS485 on com2 | |

### System configuration

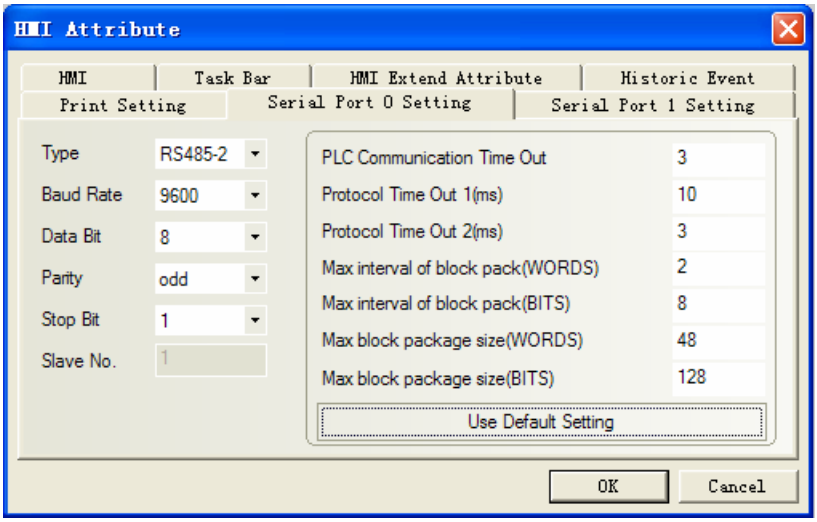
| Series | CPU | Link Module | COM Type | Parameter | Cable |
|---|---|---|---|---|---|
| E/S | HW-S16ZA220R | RS232 on com1 | RS232 | Setting | Your owner cable |
| | | RS485 on com2 | RS485 | Setting | Your owner cable |

### Communication Setting

#### Haiwell RS232 communication



## Haiwell RS485 communication

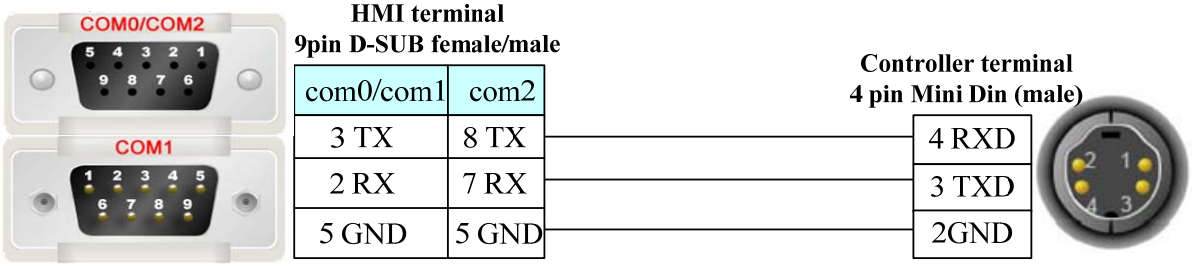



# Supported Device

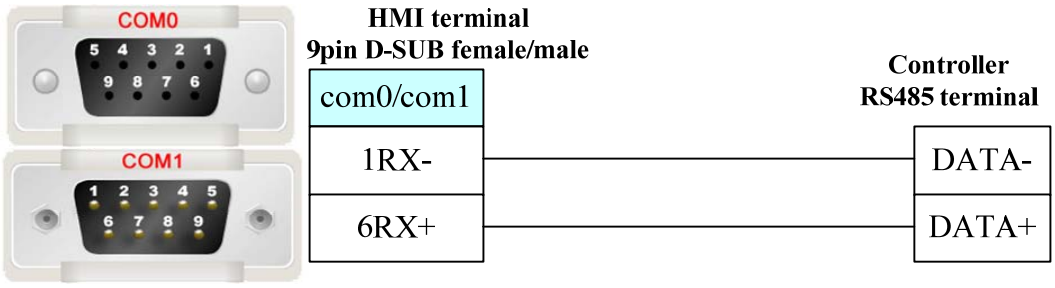
| Device | Bit Address | Word Address | Format |
|---|---|---|---|
| Special memory Relay | SM0–215 | ------- | DDD |
| Counter Relay | C0–127 | ------- | DDD |
| Timer Relay | T0–127 | ------- | DDD |
| Internal Relay | M0–2047 | ------- | DDDD |
| Switch Output | Y0–127 | ------- | DDD |
| Switch Input | X0–127 | ------- | DDD |
| System register | ------- | SV0-139 | DDD |
| Counter(Current Value) | ------- | CCV-16 0-47&80-127 | DDD |
| Counter(Current Value double word) | ------- | CCV-32 48-79 | DD |
| Timer(Current Value) | ------- | TCV0-127 | DDD |
| Internal Register | ------- | V0-2047 | DDDD |
| Analog Output | ------- | AQ0-31 | DD |
| Analog Input | ------- | AI0-31 | DD |

# Cable Diagram

## Haiwell RS232 communication cable



### Haiwell RS485 communication cable




## 6.25 HanG

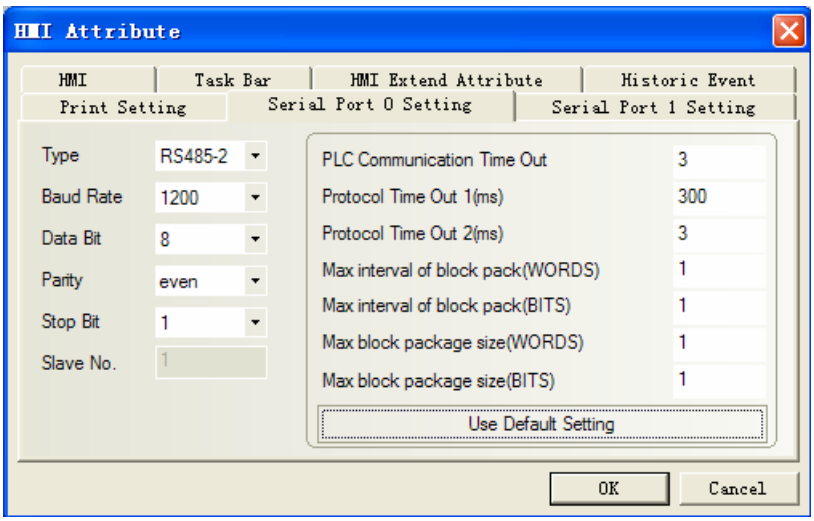
### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| HanG | DTS3338 | RS485 on the CPU unit | HanG |

### System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| HanG | DTS3338 | RS485 on the CPU unit | RS485 | Setting | Your owner cable |

### Communication Setting



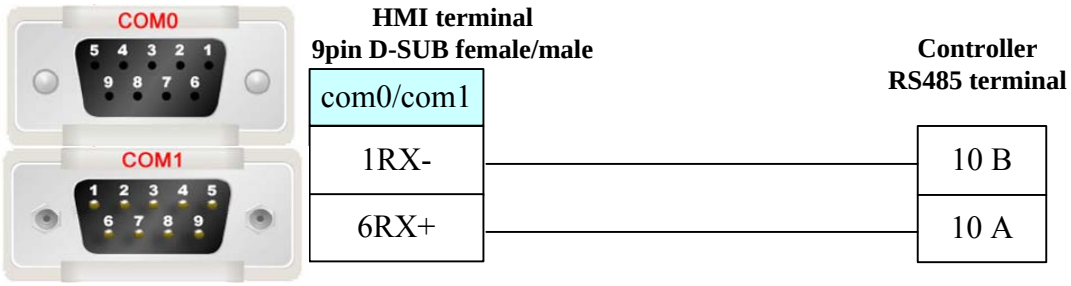

### Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Password | ------ | APAS 0 | H | |

| | | | | |
|---|---|---|---|---|
| Meter Number | ------ | ANUM C032 | HHHH.H | |
| Init Meter | ------ | ASTR 0 | H | |
| Register value | ------ | AMVD 9010 | HHHH | |

**Note：** Use text part to show meter number (ANUM). AMVD data type: signed integer

## Cable Diagram




# 6.26 Hitachi Inverter

## Serial Communication

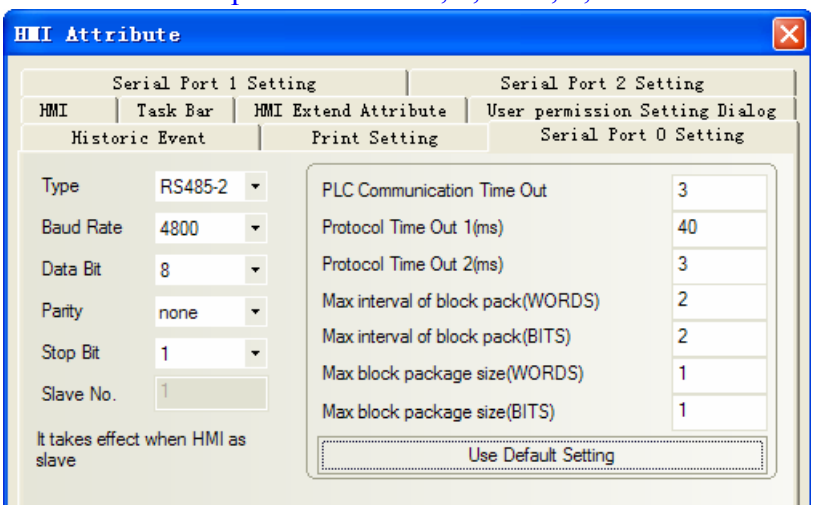
| Series | CPU | Link Module | Driver |
|---|---|---|---|
| Hitachi Inverter | SJ300 | RS485-2 | Hitachi SJ300 |

## System configuration

| Series | CPU | Link Module | Parameter | Cable |
|---|---|---|---|---|
| Hitachi Inverter | SJ300 | RS485-2 | Setting | Your owner cable |

## Communication Setting

HMI default communication parameter: 4800, 7, none, 1; station: 1



Inverter internal setting

| Code | Name | description |
|---|---|---|
| A001 | Frequency set | 00(VR)/01(Terminal)/02(operator)/03(RS485)/04(OPT 1)/05(OPT 2) |
| A002 | Run set | 01(Terminal)/02(operator)/03(RS485) /04(OPT 1)/05(OPT 2) |
| C71 | Baudrate | 02(close loop detect)/ 03(2400bps)/ 04(4800bps)/ 05(9600bps)/ 06(19200bps) |
| C72 | Station set | 1~32 |
| C73 | Data bit | 7(7 bit)/8(8 bit) |
| C74 | Parity | 00(none)/01(even)/02(odd) |
| C75 | Stop bit | 1(bit)/2(bit) |

Note：A001, A002 must be set 03（RS485）in order to communication with HMI.

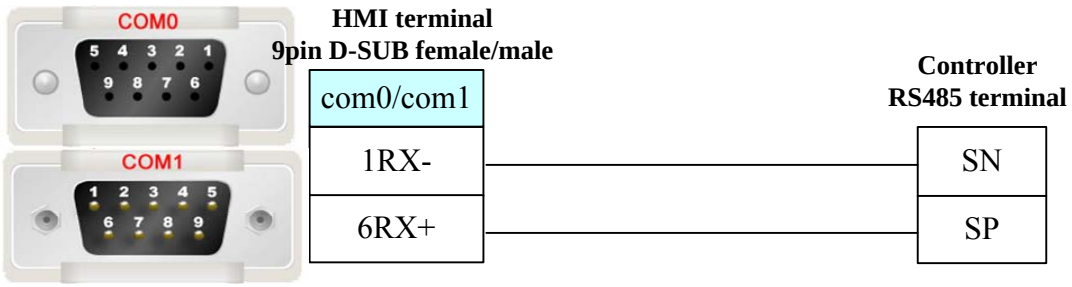
## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| | ------ | P Extend Func 0~50 | DD | |
| | ------ | H Extend Func 0~512 | DDD | |
| | ------ | F Func Date 0~65535 | DDDDD | |
| | ------ | C Func Date 0~65535 | DDDD | |
| | ------ | B Func Date 0~999 | DDD | |
| | ------ | A Func Date 0~999 | DDD | |
| FWD/REW/STOP | | (00)FWD/REW/STOP 0 | D | Write only |
| FREQ SET | ------ | (01)FREQ SET 0 | D | Write only |
| TerminalPoint State | | (02)TerminalPoint State 0~7 | D | Write only |
| Surveillance Data | ------ | (03)Surveillance Data 0~12 | DD | Read only |
| Transducer State | | (04)Transducer State 0~3 | D | Read only |
| Trip Record | ------ | (05)Trip Record 0~54 | DD | Read only |
| Revert | ------ | (08)Revert 0 | D | Write only |
| Recount Motor Con | ------ | (0B)Recount Motor Cons 0 | D | Write only |
| Store EEPROM | ------ | Store EEPROM 0 | D | |

Note：(02)TerminalPoint State 0~7 use text part

## Cable Diagram

### RS485-2 communication cable



## 6.27 Hitachi IES Co., Ltd

### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| H | H-20<br>H-28<br>H-40<br>H-64<br>H-200(CPU-02H)<br>H-250(CPU21-02H)<br>H-252B(CPU22-02HB)<br>H-252C(CPU22-02HC)<br>H-300(CPU-03Ha)<br>H-302(CPU2-03H)<br>H-700(CPU-07Ha)<br>H-702(CPU2-07H)<br>H-2000(CPU-20Ha)<br>H-2002(CPU2-20H)<br>H-4010(CPU3-40H)<br>H-1002(CPU2-10H) | port on CPU | Hitachi |
| | H-300(CPU-03Ha)<br>H-302(CPU2-03H)<br>H-700(CPU-07Ha)<br>H-702(CPU2-07H)<br>H-2000(CPU-20Ha)<br>H-2002(CPU2-20H)<br>H-4010(CPU3-40H) | COMM-H<br>COMM-2H | |
| | H-1002(CPU2-10H) | COMM-2H | |
| EH-150 | EH-150(EH-CPU104)<br>EH-150(EH-CPU104A)<br>EH-150(EH-CPU208)<br>EH-150(EH-CPU208A)<br>EH-150(EH-CPU308)<br>EH-150(EH-CPU308A)<br>EH-150(EH-CPU316)<br>EH-150(EH-CPU316A)<br>EH-150(EH-CPU448)<br>EH-150(EH-CPU448A)<br>EH-150(EH-CPU516)<br>EH-150(EH-CPU548) | Serial port 1 on CPU<br>Serial port 2 on CPU | |
| | EH-150(EH-CPU516) | Port 1 on EH-SIO | |

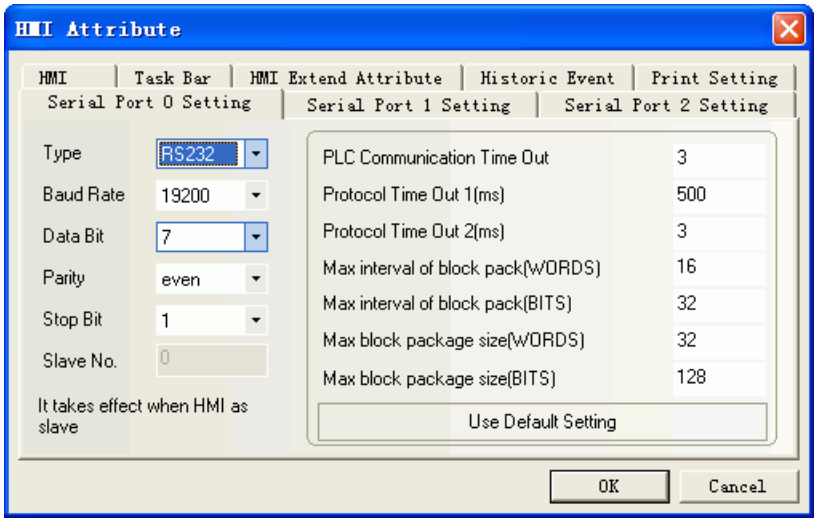
| | | | |
|---|---|---|---|
| | EH-150(EH-CPU548) | Port 2 on EH-SIO | |
| MICRO-EH | MICRO-EH(EH-D10□□□)<br>MICRO-EH(EH-A14□□□)<br>MICRO-EH(EH-D14□□□)<br>MICRO-EH(EH-A23□□□)<br>MICRO-EH(EH-D23□□□)<br>MICRO-EH(EH-A28□□□)<br>MICRO-EH(EH-D28□□□) | Port 1 on CPU | |
| | MICRO-EH(EH-A23□□□)<br>MICRO-EH(EH-D23□□□)<br>MICRO-EH(EH-A28□□□)<br>MICRO-EH(EH-D28□□□) | Port 2 on CPU | |
| | MICRO-EH(EH-A64□□□) | Port on CPU | |
| | MICRO-EH(EH-D64□□□)<br>MICRO-EH(EH-A40□□□)<br>MICRO-EH(EH-D40□□□)<br>MICRO-EH(EH-A20□□□)<br>MICRO-EH(EH-D20□□□) | EH-OB232<br>EH-OB485 | |

## System configuration

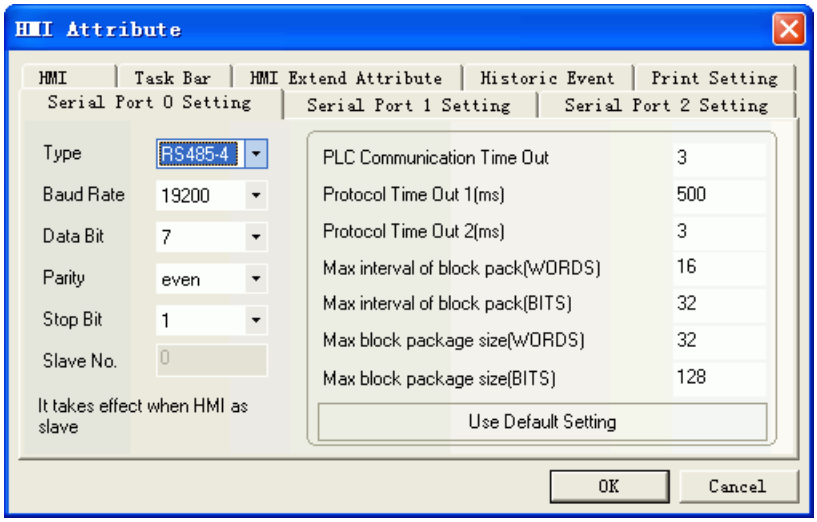
| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| H | H-20 | RS232 on the CPU unit | RS232 | | |
| EH-150 | EH-150(EH-CPU104) | Serial port 1 on CPU<br>Serial port 2 on CPU | | | |
| MICRO-EH | EH-A23DR | Port 1 on CPU | RS232 | Setting | Your owner cable |
| | | Port 2 on CPU | RS485 | Setting | Your owner cable |

## Communication Setting

### RS232 communication




### RS422 communication




## Supported Device

### Hitachi EH-A23DR

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| External Input | X 00.000-5A.095 | ------ | HHH.DDD | Read Only |
| External Output | Y 00.000-5A.095 | ------ | HHH.DDD | |
| Remote Input | X 100.000-9FF.095 | ------ | HHH.DDD | Read Only |
| Remote Output | Y 100.000-9FF.095 | ------ | HHH.DDD | |
| Internal Output | R 0000-FFFF | ------ | HHHH | |
| Data Area | M 0000-FFFF | ------ | HHHH | |
| First CPU Link | L 00000-03FFF | ------ | HHHHH | |
| Second CPU Link | L 10000-FFFFF | ------ | HHHHH | |
| On Delay Timer | TD 00000-65535 | ------ | DDDDD | |
| External Input | ------ | WX 000.00-05A.09 | HHH.DD | Read Only |
| External Output | ------ | WY 000.00-05A.09 | HHH.DD | |

| | | | | |
|---|---|---|---|---|
| Remote Input | ------ | WX 100.00-9FF.09 | HHH.DD | Read Only |
| Remote Output | ------ | WY 100.00-9FF.09 | HHH.DD | |
| Word Internal Output | ------ | WR 0000-C3FF | HHHH | |
| Special Word Output | ------ | WRF 000-FFFF | HHHH | |
| Data Area | ------ | WM 0000- FFFF | HHHH | |
| First CPU Link | ------ | WL 0000-03FF | HHHH | |
| Second CPU Link | ------ | WL 1000-FFFF | HHHH | |
| Timer Counter | ------ | TC 00000-65535 | DDDDD | |

**Note：** X0.015 in the HMI match x15 in the PLC,Y1.000 in the HMI match Y100,WX0.09 in the HMI match WX9 in the Plicate effective address is deleted radix point and the first zero behind radix point.

**The list of address correspondence**

| Bit Address | Word Address | PLC address | Notes |
|---|---|---|---|
| X 00.000-00.047 | | X 0000-0047 | |
| Y 01.000-01.031 | | Y 0100-0131 | |
| | WX 000.00-000.03 | WX 0000-0003 | |
| | WY 001.00-Y001.01 | WY 0010-0011 | |

Note:

The range of X, Y, WX, WY is according to the I/O assign. Make sure the I/O address before using the register.

## Note:

1. Communication setting

EH series, only port1 supports procedure 2.Switch DIP and change special Internal Input (WR) value to select procedure.

. EH150 series， only EHCPU***A/448/516/548 support procedure 2.

. EH PLC connect with PC only by procedure 1.

2. CPU related actions

EH150

. DIP 5 must be set on.

. If DIP 5 is on, which procedure (1 or2) to use by judging the value of the **WR** F037.The highest bit of **WR** F037 must be on, so that the other bits can be written in. The data keep on, when turn on the power again.

o By entering 0x8000, turn on the power again and value of the address is 0x0000.After settings, communication with procedure 1.

o By entering 0xC000, turn on the power again and value of the address is 0x4000.After settings, communication with procedure 2.

. The transmission speed of port 1 will be set with DIP 3, 4 switches

o 3 on, 4 off is 19200 bps

. The transmission speed of port 2 will be set with DIP 6, PHL switches.

o 6 off, PHL on is 19200 bps

MicroEH

. The transmission speed will be set with DIP switches

o SW1 on is 19200 bps

. Which procedure(1 or2) to use by judging the value of the **WR** F01A.Different with EH150, The highest bit of **WR** F01A is optional, The data will reset when turn on the power again. If the value of **R** 7F6 is set on, the data of **WR** F01A will be stored in Flash memory.

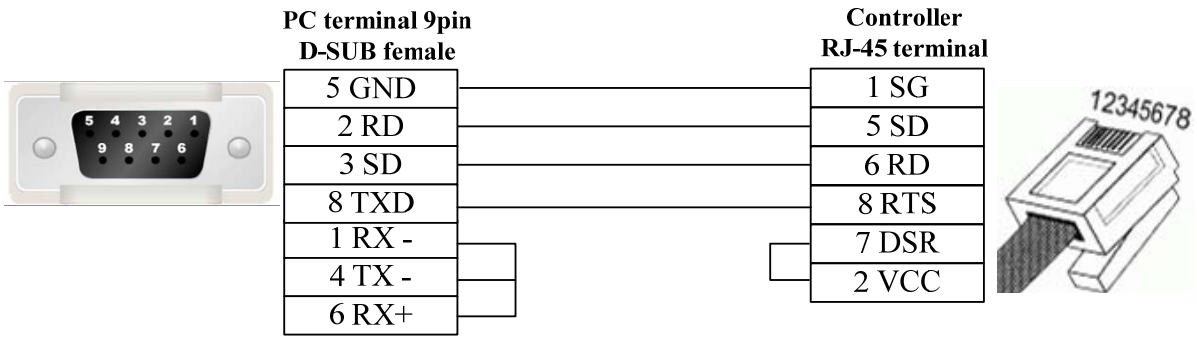
o 0x0000 for procedure 1.

o 0x8000 for procedure 2.

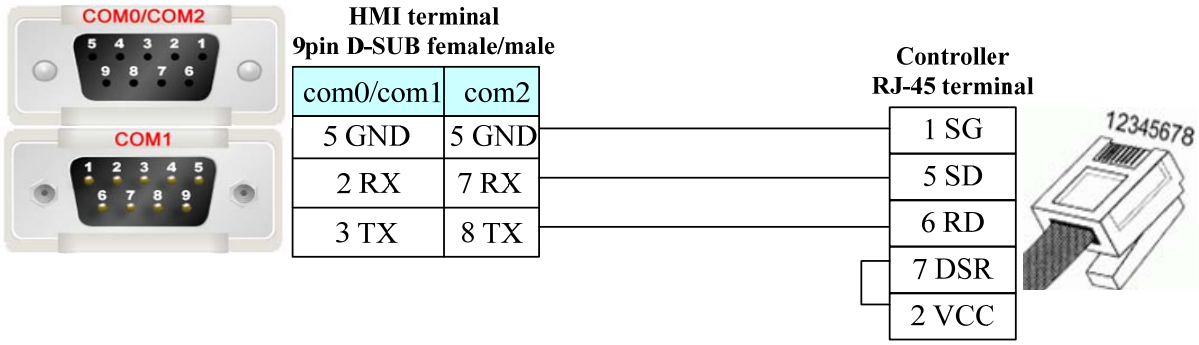
**Note:** if procedure 2 is set and written in Flash memory, external device (only supports procedure 1) or ladder editor will not connect with it.

## Cable Diagram

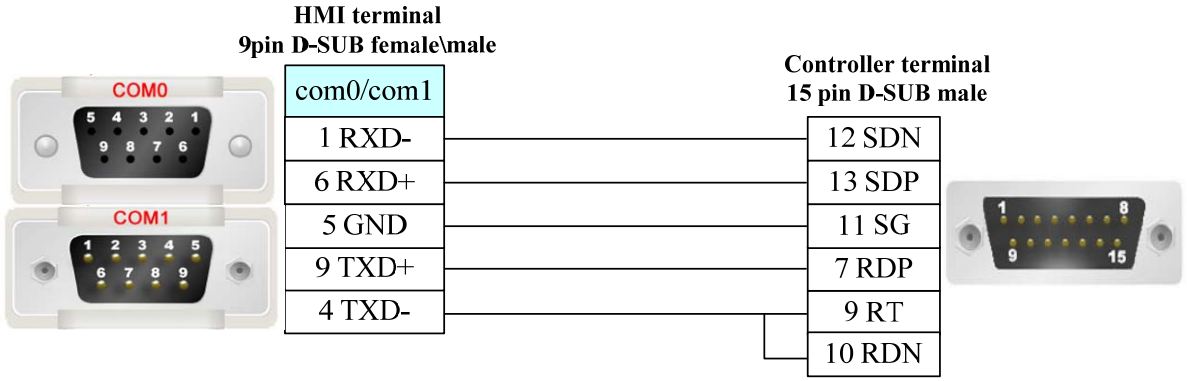
### Programming cable, as follow:




### Hitachi EH-A23DR RS232 communication cable




### Hitachi EH-A23DR RS422 communication cable



## 6.28 Hollysys Corporation

### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| Hollysys LM | LM3109 | Serial port0 on CPU 485<br>Serial port1 on CPU 232 | Hollysys LM Modbus RTU |
| | LM3107 | RS232 on CPU | |
| Hollysys LK | | RS232 on CPU | Hollysys LK Modbus RTU |

### 网口通讯

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| Hollysys LK | LK210 | Ethernet interface on CPU | Hollysys LK Modbus TCP Slave |

### System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| Hollysys LM | LM3109 | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS485on the CPU unit | RS485 | Setting | Your owner cable |
| | LM3107 | RS232 on the CPU unit | RS232 | Setting | Your owner cable |

### 网口通讯参数及电缆制作

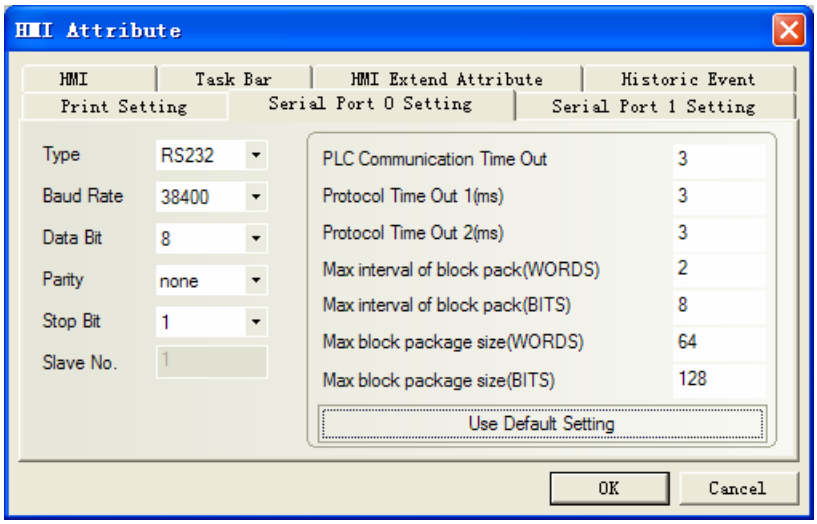
| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| Hollysys LK | LK210 | ETH on the CPU unit | ETH | Setting | Your owner cable |

### Communication Setting

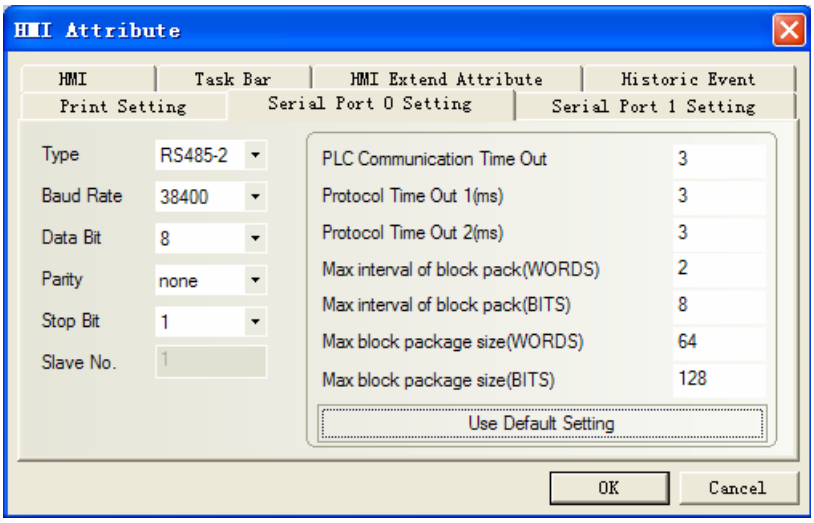
**HMI**

**默认通讯参数：**38400，8，无，1；站号：51

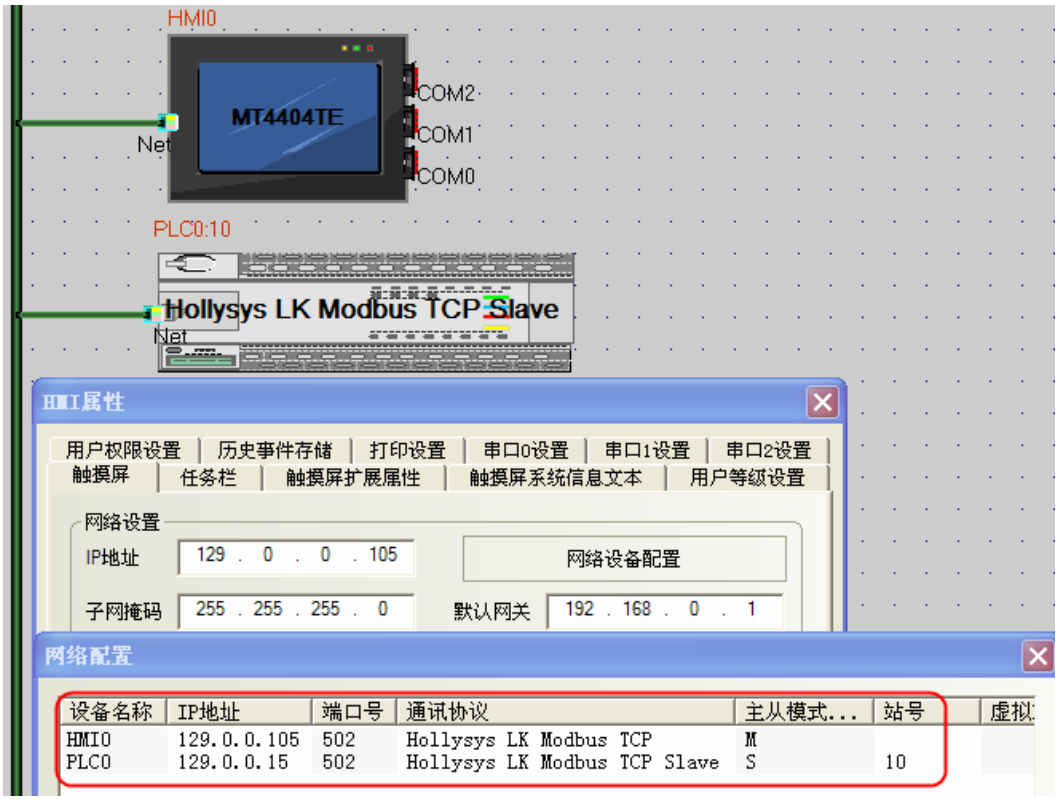
**RS232**




## RS485




# 网口通讯参数设置




**注意：**需在 plc 编程软件中设置站号

## Supported Device

**LM 系列**

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Discrete inputs and image Relay | I0.0-2.7 | ------ | D.O | |
| Discrete outputs and image Relay | Q0.0-1.7 | ------ | D.O | |
| Internal memory Relay | M100.0-7816.7 | ------ | DDDD.O | M0-99 are occupied by system diagnosis. |
| Analog inputs | ------ | IW0 | D | address must be an even number; IW,QW address range to 30 by adding a module |
| Analog outputs | ------ | QW0 | D | |
| Internal register | ------ | MW0-8190 | DDDD | |
| Internal register(double word) | ------ | MD0-8188 | DDDD | |

**Note:**

- I,IW register read only；

**LK 系列**

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| 系统内部/外部输出节点 | 0X 1-65535 | ------ | DDDDD | |
| 系统内部/外部输入节点 | 1X 1-65535 | ------ | DDDDD | |
| 模拟输入数据寄存器 | ------ | 3X 1-65535 | DDDDD | |
| 数据寄存器 | ------ | 4X 1-65335 | DDDDD | |
| 数据寄存器(DWord) | ------ | 5X 1-65535 | DDDDD | |

# Cable Diagram

## Hollysys LM RS232 communication cable

| HMI terminal 9pin D-SUB female/male | | Controller port1 terminal 9 pin D-SUB (male) |
|---|---|---|
| com0/com1 | com2 | |
| 2 RX | 7 RX | 3 TXD |
| 3 TX | 8 TX | 2 RXD |
| 5 GND | 5 GND | 5 GND |

## Hollysys LM RS485 communication cable

| HMI terminal 9pin D-SUB female/male | Controller port0 RS485 terminal |
|---|---|
| com0/com1 | |
| 1 RX- | 8 |
| 6 RX+ | 3 |
| 5 GND | 5 GND |

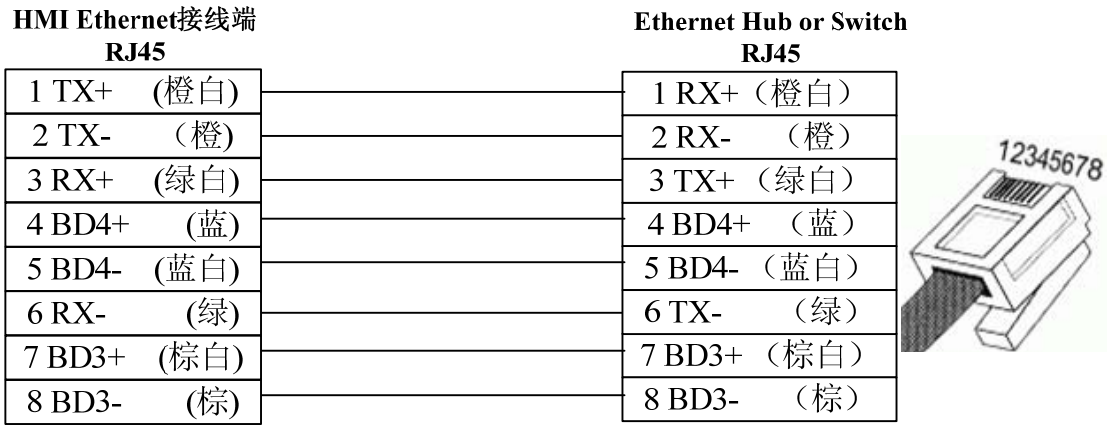
## 网口通讯协议 Ethernet 通讯线

PLC 直接与 HMI 连，用交叉网线；经 hub 或 switch 通讯，直连或交叉网线均可。

a. 交叉网线接线图：

| HMI Ethernet接线端 RJ45 | Controller接线端 RJ45 |
|---|---|
| 1 TX+ (橙白) | 3 RX+ （绿白） |
| 2 TX- （橙） | 6 RX- （绿） |
| 3 RX+ (绿白) | 1 TX+（橙白） |
| 4 BD4+ (蓝) | 4 BD4+（蓝） |
| 5 BD4- (蓝白) | 5 BD4- （蓝白） |
| 6 RX- (绿) | 2 TX- （橙） |
| 7 BD3+ (棕白) | 7 BD3+ （棕白） |
| 8 BD3- (棕) | 8 BD3- （棕） |

b. 直连网线接线图：




## 6.29 HuaDA HD-JZ06

### Serial Communication

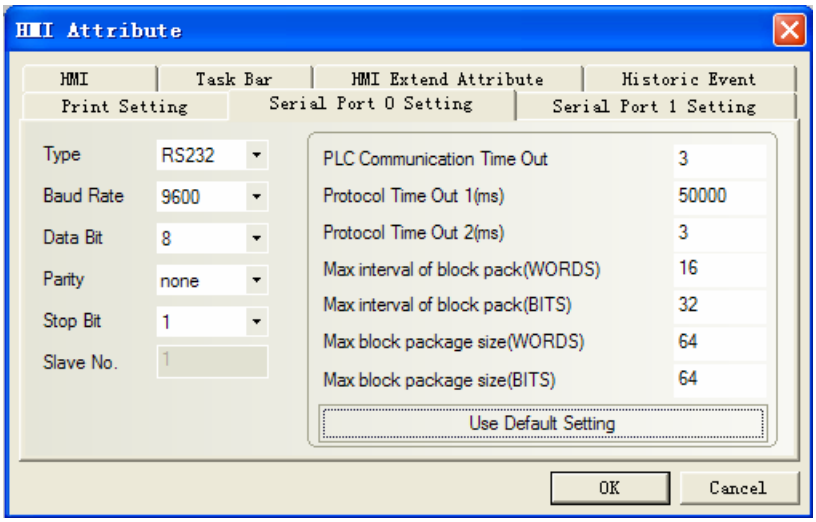
| Series | CPU | Link Module | Driver |
|---|---|---|---|
| HD | HD-JZ06 | RS232 on the CPU unit | HuaDA HD-JZ06\ HuaDA HD SLAVE |
| | | RS485 on the CPU unit | |

### System configuration

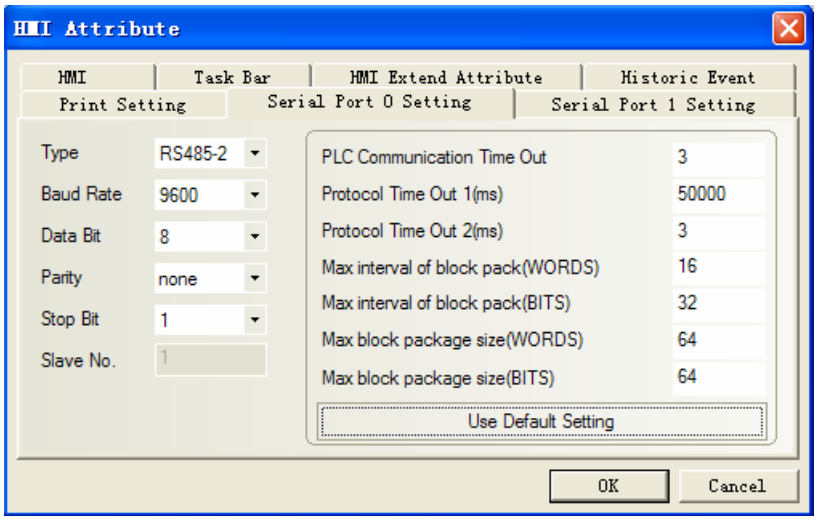
| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| HD | HD-JZ06 | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 on the CPU unit | RS485 | Setting | Your owner cable |

### Communication Setting

#### RS232 communication




#### RS485 communication

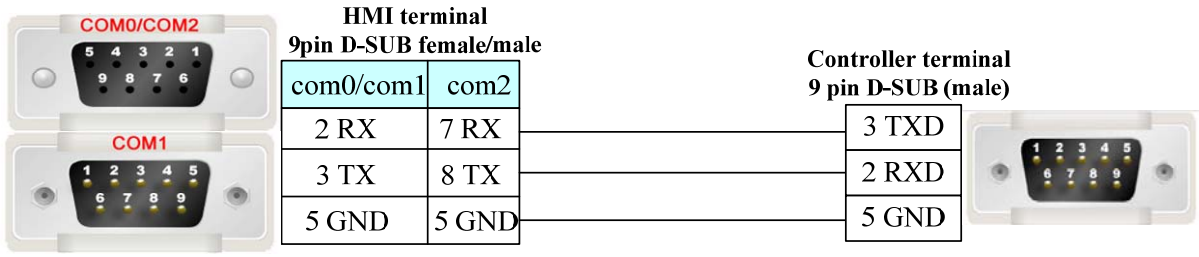



## Supported Device

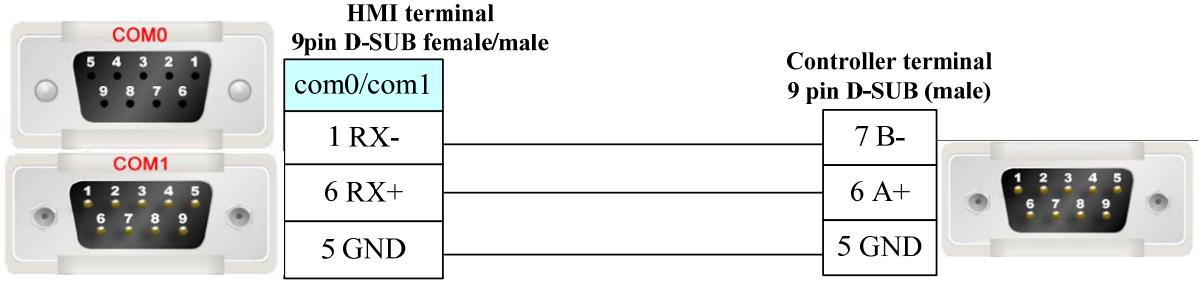
| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| HMI Internal Relay | LB 0-4095 | ------ | DDDD | |
| HMI Internal register | ------ | LW 0-4094 | DDDD | |
| MCU Register | ------ | VB 0-4095 | DDDD | |
| MCU Register | ------ | VW 0-4094 | DDDD | |

## Cable Diagram

### RS232 Port




### RS485 Port



# 6.30 IDEC Corporation

## Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| MICRO SMART | FC4A-C10R2 | RS232 on the CPU unit | IDEC MicroSmart |

## System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| MICRO SMART | FC4A-C10R2 | RS232 on the CPU unit | RS232 | Setting | Your owner cable |

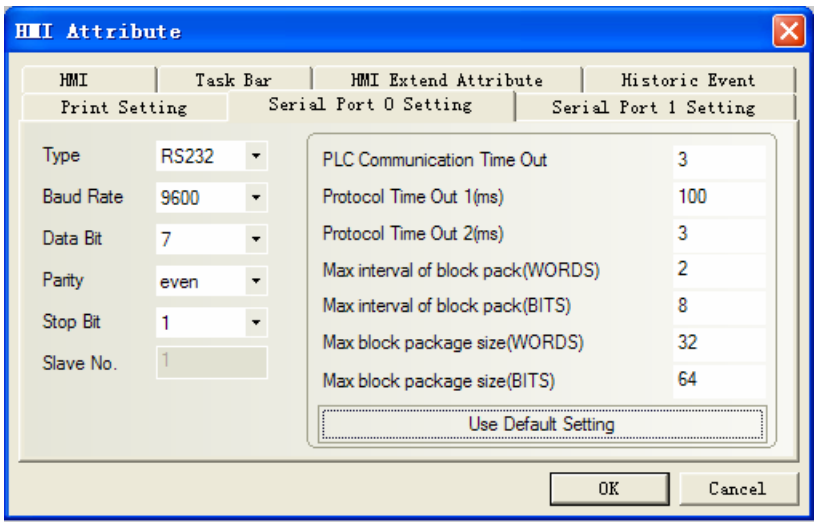
## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Internal Relay | M0.0-127.7 | ------ | DDD.O | |
| Output | Q0.0-30.7 | ------ | DD.O | |
| Input | I0.0-30.7 | ------ | DD.O | |
| Data Register | ------ | D0-8199 | DDDD | |
| Counter(Current Value) | ------ | C_CV0-99 | DD | |
| Counter(Preset Value) | ------ | C_SV0-99 | DD | |
| Timer(Current Value) | ------ | T_CV0-99 | DD | |
| Timer( Preset Value) | | T_SV0-99 | DD | |

**Note:** M address: 121 in the plc correspond to 12.1 in the Kinco HMIware.

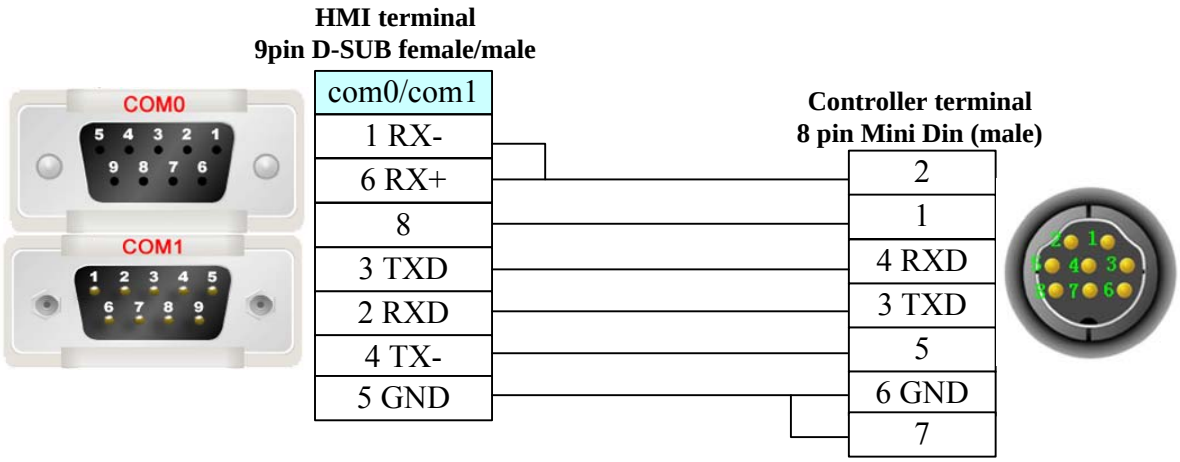
Q\I address: 1277 in the plc corresponds to 127.7 in the Kinco HMIware.

## Communication Setting



## Cable Diagram

### Idec RS232 communication cable




## 6.31 Inovance Electric Corporation

## Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| H2U | H2U-3624MR | CPU direct | Inovance H2u（don't support multi station） |
| | | COM1 | |
| | | CPU direct | Modbus RTU*1 |
| | | COM1 | |

**Note:** 1. Don't hot plug!

2. *[1] support multi station

## System configuration

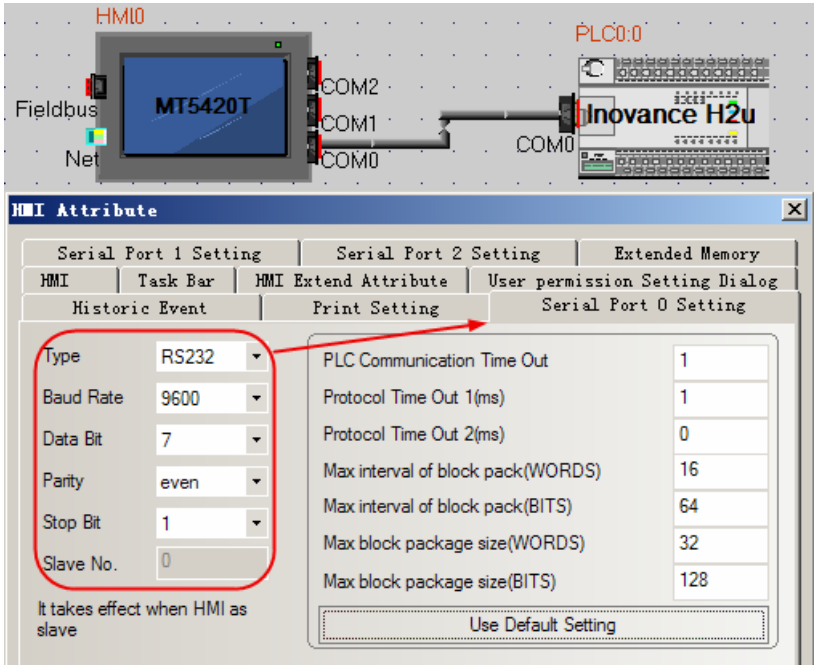
| Series | CPU | Driver | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|---|
| H2U | 3624MR | Inovance H2u | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | | RS422 on the CPU unit | RS485-4 | Setting | Your owner cable |
| | | | RS485 on the CPU unit | RS485-2 | Setting | Your owner cable |
| | | | RS485 on the com1 | RS485-2 | Setting | Your owner cable |
| | | Modbus RTU | RS485 on the CPU unit | RS485-2 | Setting | Your owner cable |
| | | | RS485 on the com1 | RS485-2 | Setting | Your owner cable |

## Communication Setting

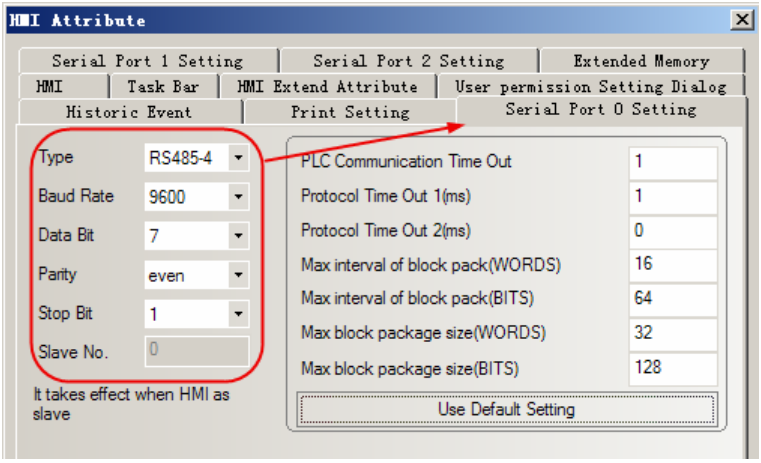
### HMI

HMI monitor protocol communication: 9600, 7, even, 1; station: 0

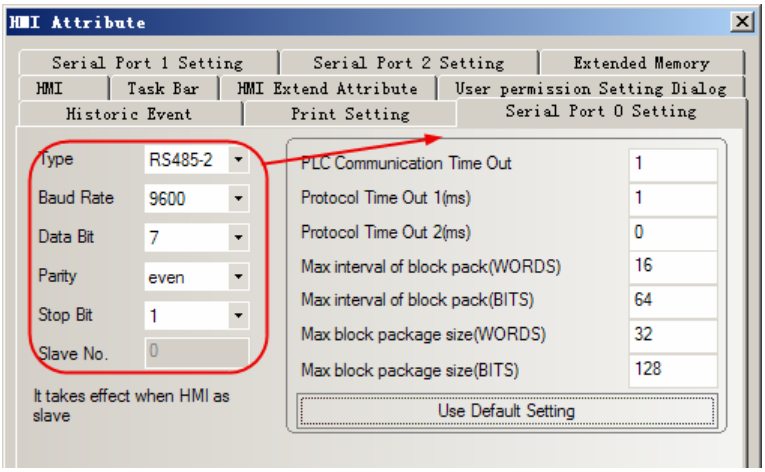
RS232




RS422




RS485



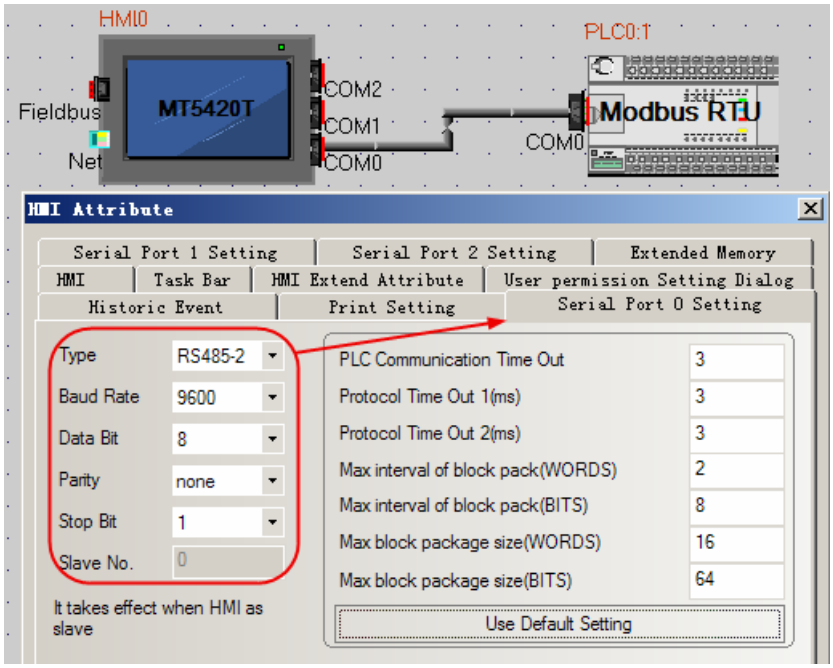

PLC setting

You should put off JP0, if communication on the COM0, RS485.

You should set D8126=01h, if communication on the COM1, RS485.

## MODBUS-RTU Slave protocol

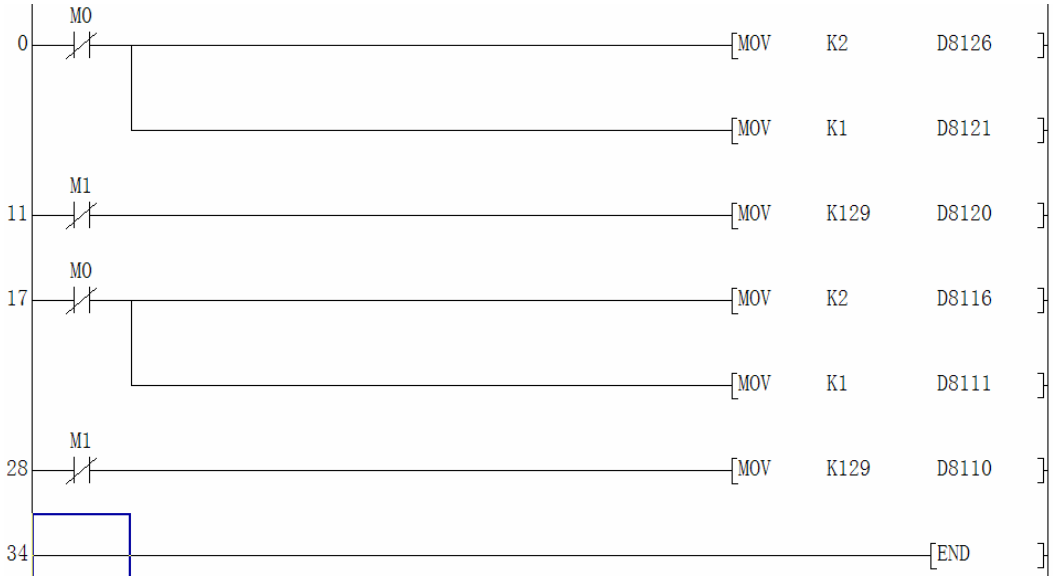
**RS485 communication parameter:** PLC COM0 port is controlled by D8110; COM1 port is controlled by D8120.




### PLC setting

COM0 setting: D8116=02h, modbus-RTU slave protocol; D8111=1, station: 1; D8110=81h, communication parameter: 9600, 8, none, 1.

COM1 setting: D8126=02h, modbus-RTU slave protocol; D8121=1, station: 1; D8120=81h, communication parameter: 9600, 8, none, 1.



## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Input Relay | X 000-177 | ------ | OOO | |
| Output Relay | Y 000-177 | ------ | OOO | |
| Auxiliary Relay | M 0000-1535 | ------ | DDDD | |
| Timer Relay | T_bit 000-255 | ------ | DDD | |
| Counter Relay | C_bit 000-255 | ------ | DDD | |
| Data Register Relay | SM 8000-8255 | ------ | DDDD | |
| Status Relay | S 000-999 | ------ | DDD | |
| Timer | ------ | T 000-255 | DDD | |
| Counter | ------ | C 000-199 | DDD | |
| Data register | ------ | D 0000-7999 | DDDD | |
| Special Data Register | ------ | SD 8000-8255 | DDDD | |
| Counter Memory（DWord） | ------ | C_dword 200-255 | DDD | |

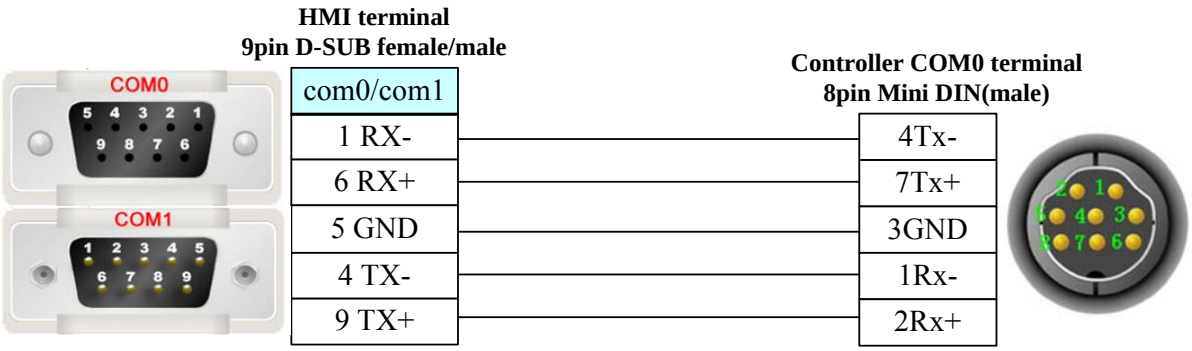
## Cable Diagram

### COM0 port communication cable

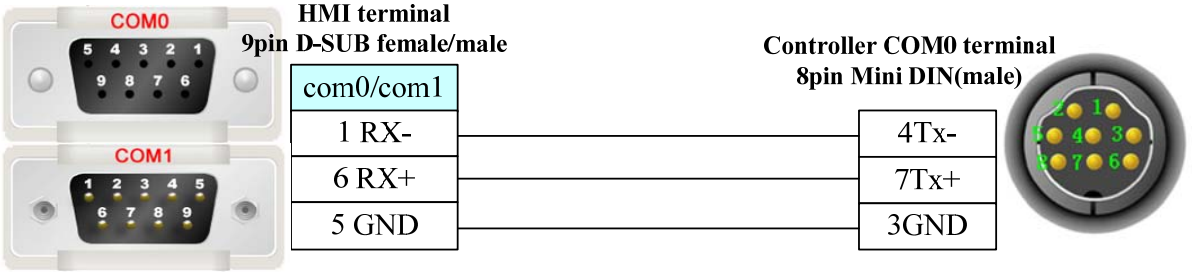
RS232

Programming cable, SC-09

RS422 communication cable

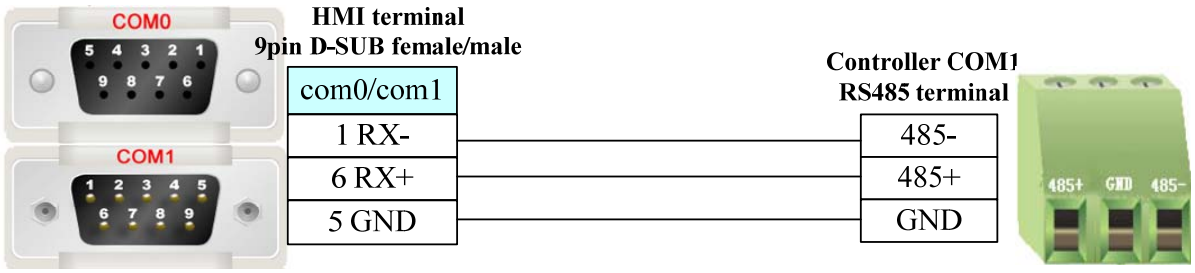



RS485 communication cable



Note: put off JP0 by RS485.

### COM1 port communication cable




## 6.32 KDN Corporation

### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| KDN-K3 | KDN-K304-14AR | RS232 on the CPU unit | KDN-K3 |

### System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| KDN-K3 | K304-14AR | RS232 on the CPU unit | RS232 | Setting | Your owner cable |

### Supported Device

#### KDN-K3

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Discrete inputs and image Relay | I0.0-7.7 | ------ | D.O | |
| Discrete outputs and image Relay | Q0.0-7.7 | ------ | D.O | |
| Internal memory Relay | M0.0-31.7 | ------ | DD.O | |
| Analog inputs | ------ | AIW0-30 | DD | |
| Analog outputs | ------ | AQW0-30 | DD | |
| Internal register | ------ | VW0-4094 | DDDD | |
| Internal register(double word) | ------ | VD0-4092 | DDDD | |

**Note:**

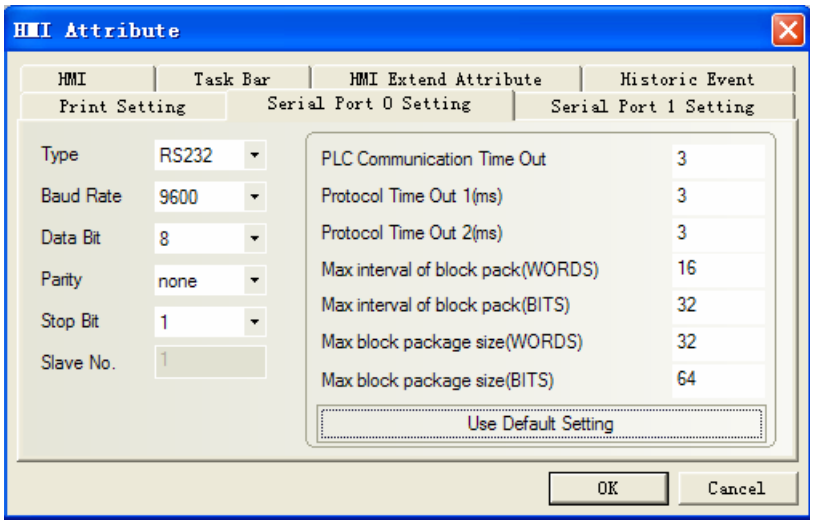
1） AIW, AQW, VW, VD address must be an even number.

2） AIW and I device read only.

3） The single floating VR of PLC corresponds with the VD of the Ev5000 (choose single floating).

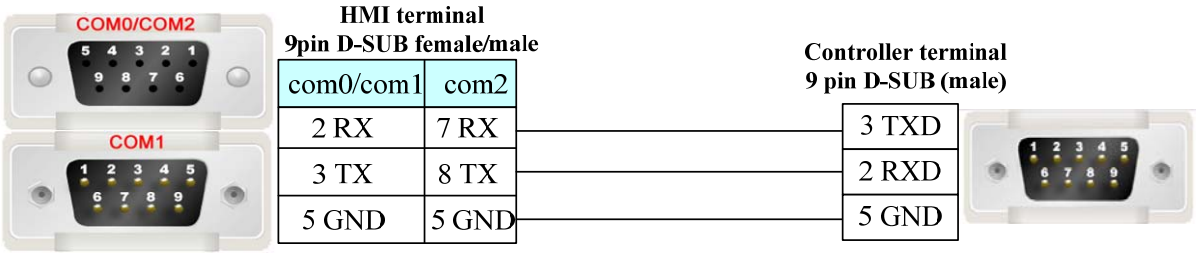
### Communication Setting

#### KDN-K3 RS232 communication

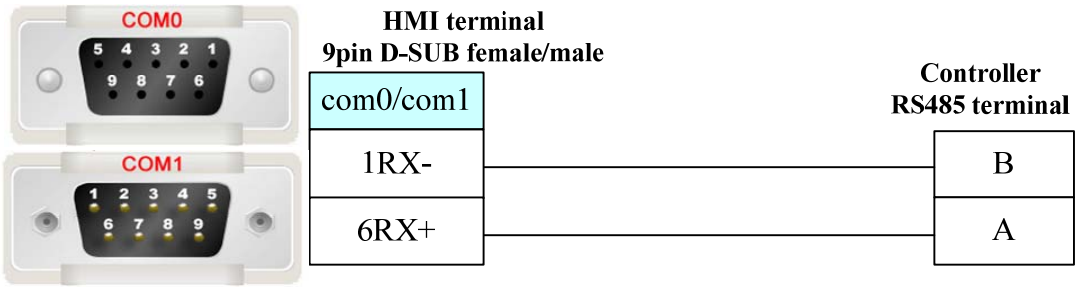



## Cable Diagram

### RS232 communication cable




### RS485 communication cable




## 6.33 Kinco Corporation

### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| KINCO | Kinco-K306-24AR | RS232 on the CPU unit | KINCO |

### System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| KINCO | K306-24AR | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 on the port | RS485 | Setting | Your owner cable |

## Supported Device

### KINCO

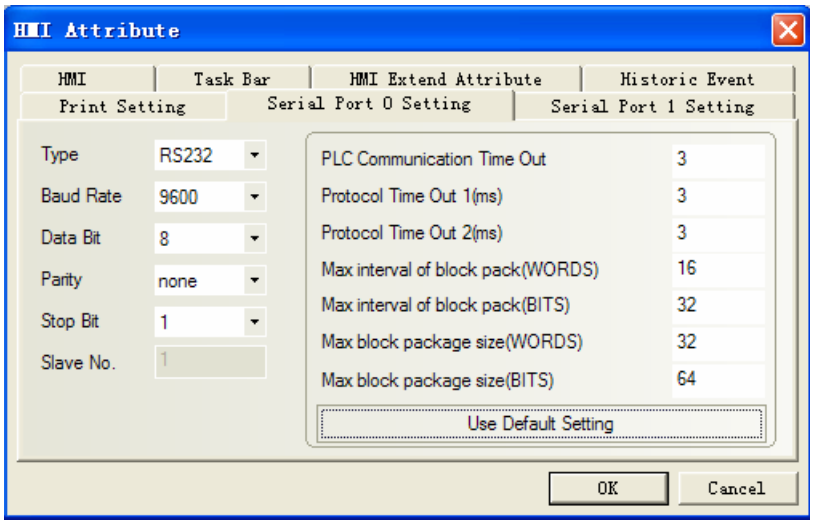
| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Discrete inputs and image Relay | I0.0-31.7 | ------ | D.O | |
| Discrete outputs and image Relay | Q0.0-31.7 | ------ | D.O | |
| Internal memory Relay | M0.0-31.7 | ------ | DD.O | |
| Analog inputs | ------ | AIW0-62 | DD | |
| Analog outputs | ------ | AQW0-62 | DD | |
| Internal register | ------ | VW0-4094 | DDDD | |
| Internal register(double word) | ------ | VD0-4092 | DDDD | |

**Note:**

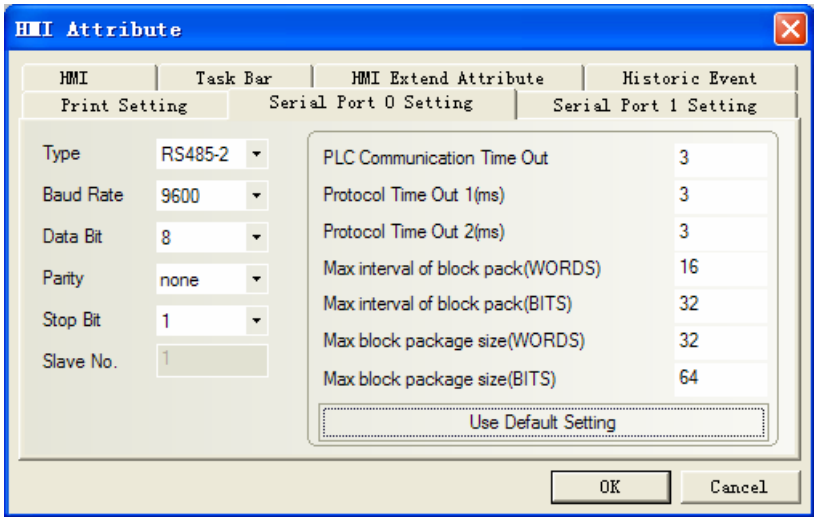
1) AIW, AQW, VW, VD address must be an even number.
2) AIW and I device read only.
3) The single floating VR of PLC corresponds with the VD of the Ev5000 (choose single floating).

## Communication Setting

### KINCO RS232 communication

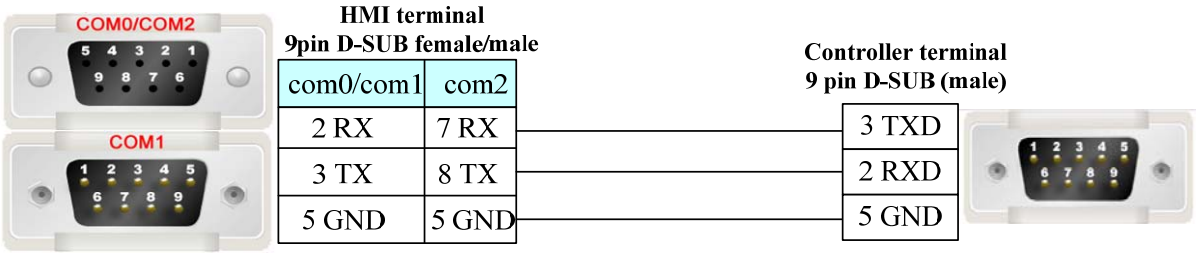



### KINCO RS485 communication

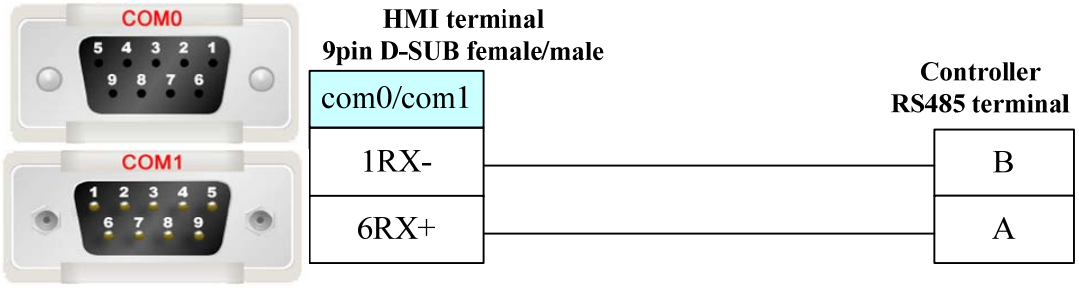



## Cable Diagram

RS232 communication cable




RS485 communication cable




# 6.34 Kinco Servo Series

## Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| ED | ED100 | RS232 on the CPU unit | Kinco Servo Series |
| | | RS485 on port | |
| | ED200 | RS232 on the CPU unit | |
| | | RS485 on port | |

| | | | |
|---|---|---|---|
| ECOVARIO | ECOVARIO | RS232 on the CPU unit | |
| | | RS485 on port | |
| CD | CD420<br>CD430<br>CD620 | RS232 on the CPU unit | |

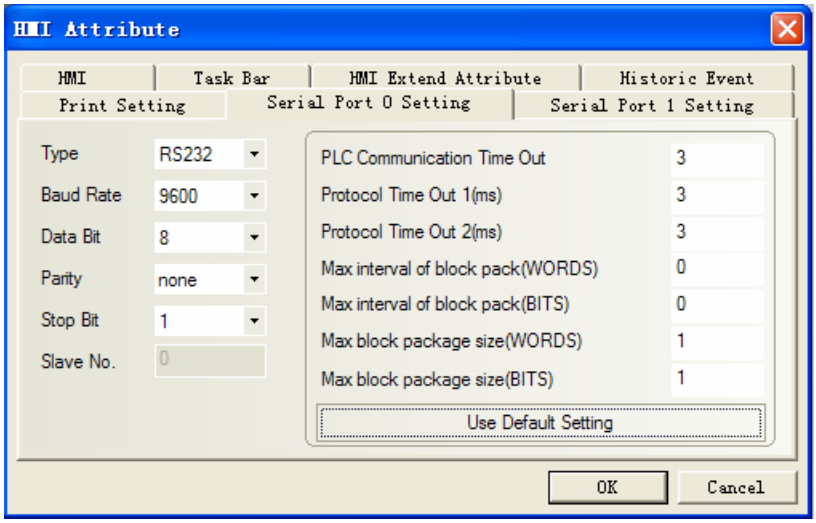
## System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| ED | ED100 | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 on port | RS485-2 | Setting | Your owner cable |
| | ED200 | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 on port | RS485-2 | Setting | Your owner cable |
| ECOVARIO | ECOVARIO | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 on port | RS485-2 | Setting | Your owner cable |
| CD | CD420<br>CD430<br>CD620 | RS232 on the CPU unit | RS232 | Setting | Your owner cable |

## Communication Setting

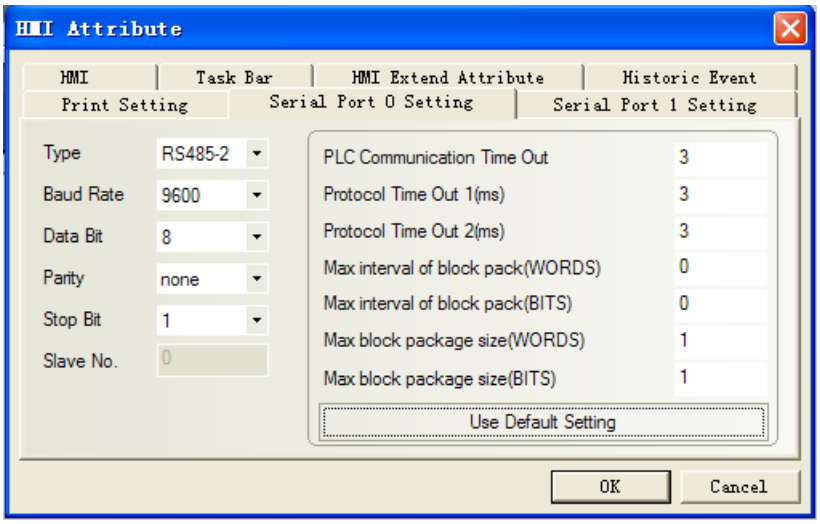
**Default communication:** 9600, 8, none, 1; staion: 1

### RS232 communication




**Note:** If the servo controller to modify the station number, the servo power needed to restart, the station number to take effect, otherwise the communication is incorrect.

### RS485 communication




## Supported Device

| Device | Bit Address | Word Address | Range | Notes |
|---|---|---|---|---|
| word | ———— | 20 | Refer to the kinco manual | |
| word | ———— | 10 | Refer to the kinco manual | |
| word | ———— | 8 | Refer to the kinco manual | |

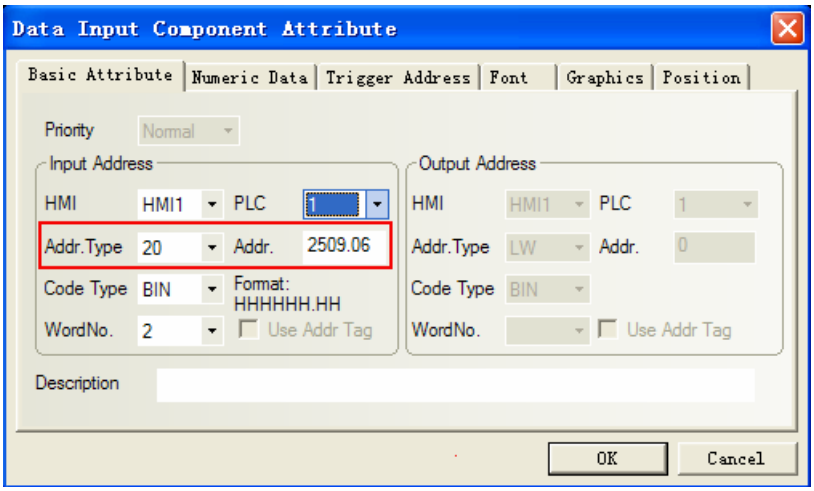
**Note:**

Use the touch screen, pay attention to the rules addressing. The specific reference to the following description.

Touch-screen type of address: according to the number of bits to the servo. Can only be 20, 10, 8.

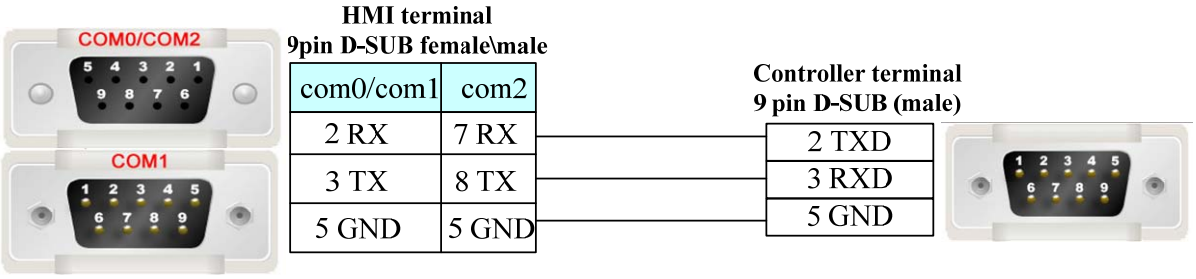
Address of the touch screen: master address, and sub address

For example, kinco servo drive manual on page 117, the address 2509, sub-address 06, median 20, addressing the touch screen as shown:

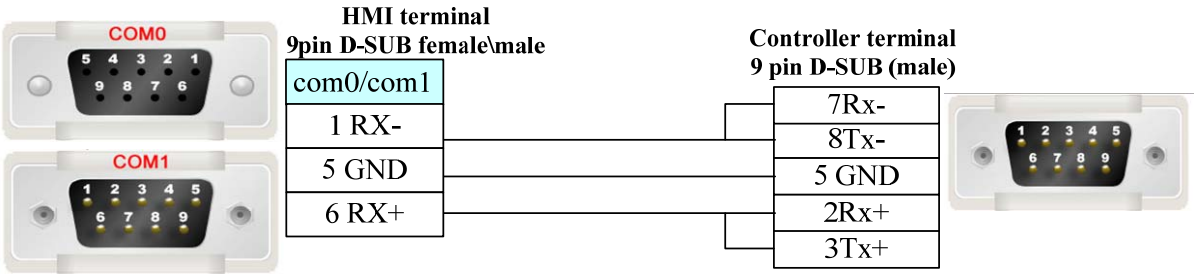



## Cable Diagram

### RS232 communication cable




**RS485 communication cable**




## 6.35 Keyence Corporation

### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| KV-16DT | KV-16DT | CPU Direct | Keyence KV-16DT |
| KV-1000 | KV-1000 | CPU Direct | Keyence KV-1000 |
| KV-3000 | KV-3000 | CPU Direct | Keyence KV-3000 |

### Network communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| KV-5000 | KV-5000 | CPU Direct | Keyence KV-5000 EtherNet Slave |

### Serial System configuration

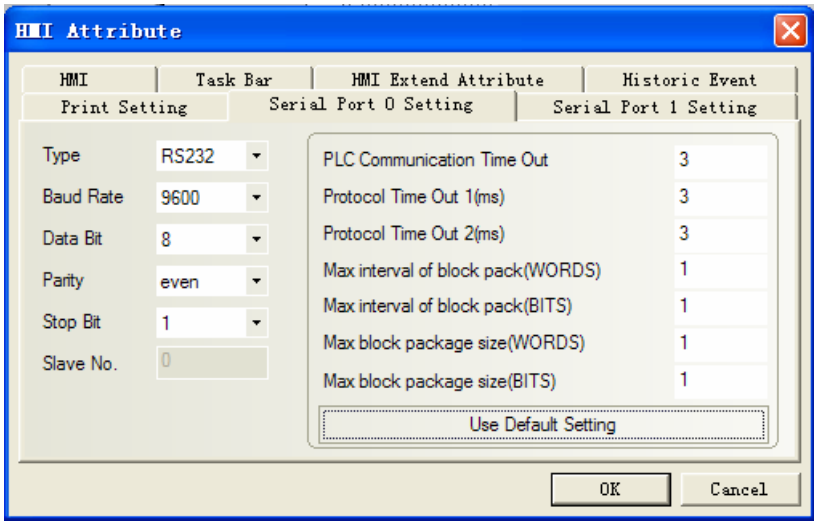
| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| KV-16DT | KV-16DT | CPU Direct | RS232 | Setting | Your owner cable |
| KV-1000 | KV-1000 | CPU Direct | RS232 | Setting | Your owner cable |
| KV-3000 | KV-3000 | CPU Direct | RS232 | Setting | Your owner cable |

### Network System configuration

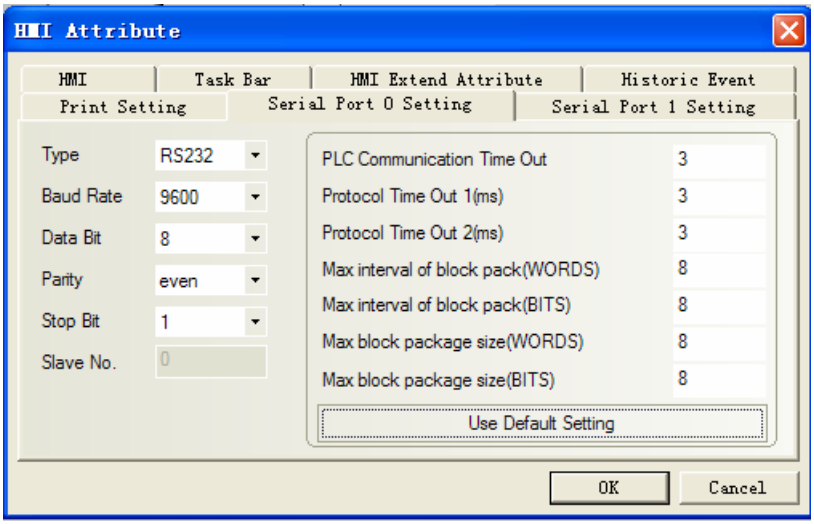
| Series | CPU | Link Module | Connect Type | Parameter | Cable |
|---|---|---|---|---|---|
| KV-5000 | KV-5000 | CPU Direct | Ethernet | Setting | Your owner cable |

# Serial Communication Setting

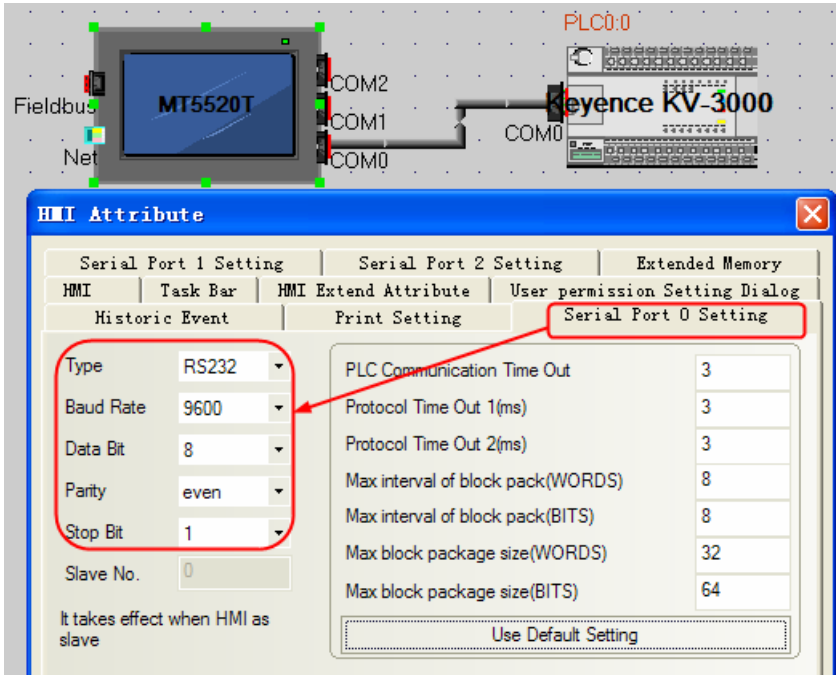
## KV-16DT




## KV-1000

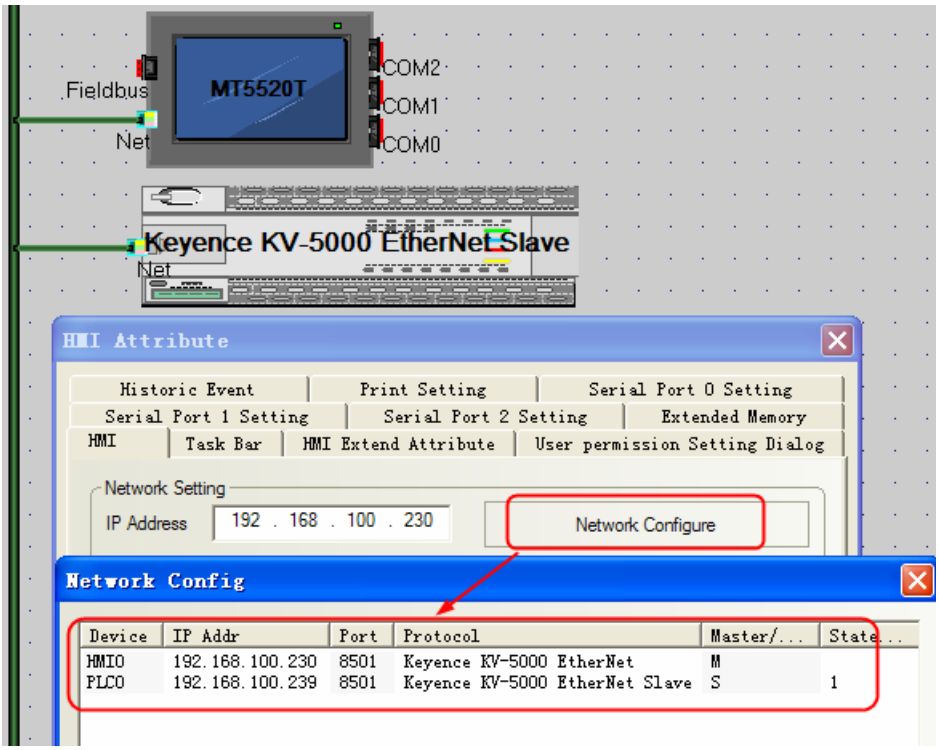



**KV-3000 default communication:** 9600, 8, 1, even; station: 0(Don't support station No.)



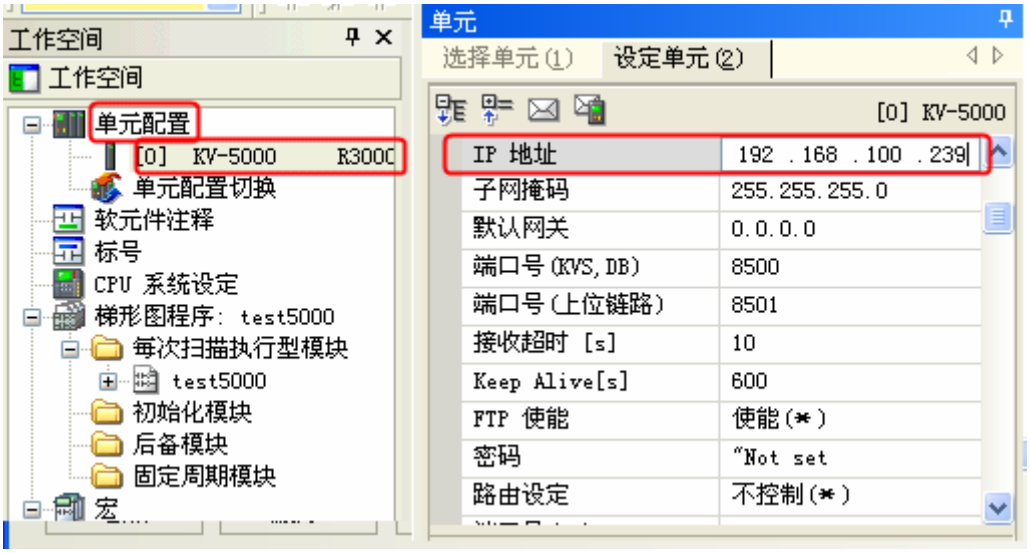

## Network Communication Setting

### HMI

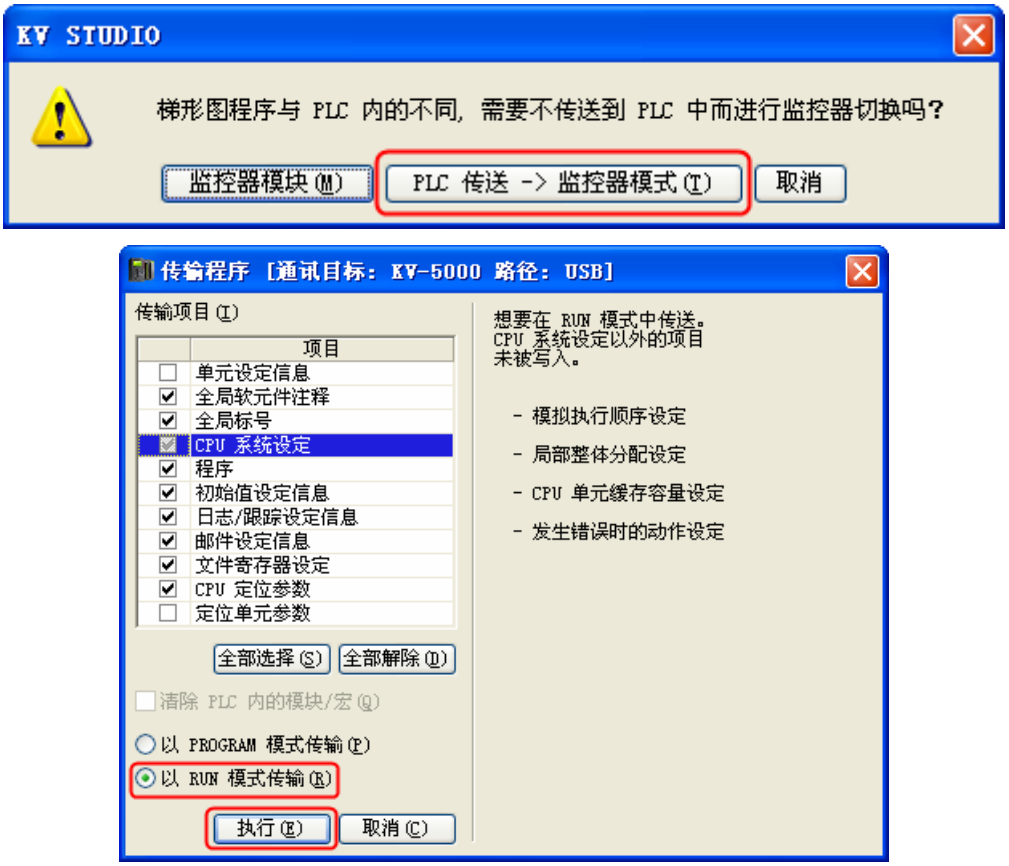



### PLC configuration

1. "Editor" window, click [Configure unit] in the "[0] KV-5000 R30000" to modify the IP address of the PLC, PLC and PC in the same segment, modify the IP address of the test shown, click [confirm] to save the modifications




2. Switch to the "Monitor" window to see the changes of the figure will pop up window, Click [PLC transfer -> Monitor mode (T)], pop-up "transmission program [communication goals: KV-5000 path: USB]", Click [implementation], content writing, once again view the "[0] KV-5000 R30000" in the PLC's IP address in the "Monitor" window [unit configuration], This indicates that the address has been modified over.




## Supported Device

**KV-16DT**

| Device | Bit Address | Word Address | Format |
|---|---|---|---|
| Counter Relay | Counter_contact0- 59915 | ------ | DDDDD |
| Timer Relay | Timer_contact0- 65535 | ------ | DDDDD |
| High speed counter | CTH_contact0- 511 | ------ | DDD |
| High speed counter Comparator | CTC_contact0- 511 | ------ | DDD |
| Relay | Relay0- 32766 | ------ | DDDDD |
| Counter current | ------ | Counter_current0- 3915 | DDDD |
| Counter preset | ------ | Counter_preset0- 65535 | DDDDD |
| Timer current | ------ | Timer_current0- 65534 | DDDDD |
| Timer preset | ------ | Timer_preset0- 11998 | DDDDD |
| High speed counter | ------ | CTH_current0- 65534 | DDDDD |
| High speed counter | ------ | CTH_preset0- 32766 | DDDDD |
| High speed counter Comparator | ------ | CTC_current0-65534 | DDDDD |
| High speed counter Comparator | ------ | CTC_preset0- 32766 | DDDDD |
| Data memory | ------ | DM0- 32766 | DDDDD |
| Temporary data memory | ------ | TM0- 32766 | DDDDD |

**Note:** Non-supported batch transfer of bits or words for this protocol.

## KV-1000

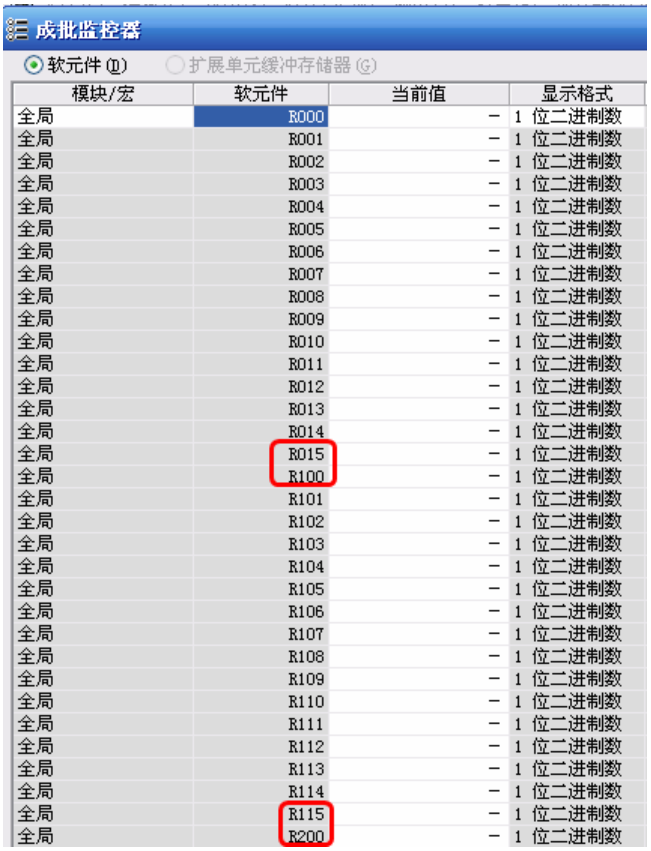
| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Relay | R0-59915 | ------ | DDDDD | |
| Control Relay | CR0-3915 | ------ | DDDD | |
| Internal auxiliary relay | MR0-65535 | ------ | DDDDD | |
| Latch Relay | LR0-65535 | ------ | DDDDD | |
| Data Memory | ------ | DM0-65534 | DDDDD | |
| Control Memory | ------ | CM0-11998 | DDDDD | |
| Temporary data memory | ------ | TM0-511 | DDD | |
| Extended Data memory | ------ | EM0-65534 | DDDDD | |
| Extended Data memory | ------ | FM0-32766 | DDDDD | |

## KV-3000

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Relay | R0-999.15 | ------ | DDD.DD | |
| Control Relay | CR0-39.15 | ------ | DD.DD | |
| Internal auxiliary relay | MR0-999.15 | ------ | DDD.DD | |
| Latch Relay | LR0-999.15 | ------ | DDD.DD | |
| Data Memory | ------ | DM0-65534 | DDDDD | |
| Control Memory | ------ | CM0-5999 | DDDD | |

| | | | | |
|---|---|---|---|---|
| Temporary data memory | ------ | TM0-511 | DDD | |
| Extended Data memory | ------ | EM0-65534 | DDDDD | |
| Extended Data memory | ------ | FM0-32767 | DDDDD | |

Note: PLC bit address without a decimal point in the distinction, in fact, the last two addresses corresponding to the fractional part, makes a distinction between the touch screen.




Example, PLC which corresponds to R009, the touch screen address is R0.09; PLC which corresponds to R015, the touch screen address is R0.15.

## KV-5000

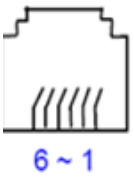
| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Relay | R0-3744.15 | ------ | DDDD.DD | |
| Control Relay | CR0-244.15 | ------ | DDD.DD | |
| Internal auxiliary relay | MR0-4095.15 | ------ | DDDD.DD | |
| Latch Relay | LR0-4095.15 | ------ | DDDD.DD | |
| Data Memory | ------ | DM0-65534 | DDDDD | |
| Control Memory | ------ | CM0-11998 | DDDDD | |
| Temporary data memory | ------ | TM0-511 | DDD | |
| Extended Data memory | ------ | EM0-65534 | DDDDD | |
| Extended Data memory | ------ | FM0-32767 | DDDDD | |

Note: PLC bit address without a decimal point in the distinction, in fact, the last two addresses corresponding to the fractional part, makes a distinction between the touch screen.

# Cable Diagram

## KV RS232 communication cable

| HMI terminal 9pin D-SUB female/male | Controller terminal RJ-12(male) |
|---|---|
| com0/com1 | |
| 3 TXD | 4 RXD |
| 2 RXD | 2 TXD |
| 5 GND | 3 GND |
| 6 | 6 |
| 8 | 5 |




## Ethernet communication protocol cable

Cross-connection or crossover network cable can be used as communication cable via the hub or switch

### a. Cross-connection cable diagram

| HMI Ethernet terminal RJ45 | Controller terminal RJ45 |
|---|---|
| 1 TX+ (orange,white) | 3 RX+ （green,white） |
| 2 TX- （orange) | 6 RX- （green） |
| 3 RX+ (green,white) | 1 TX+（orange,white） |
| 4 BD4+ (blue) | 4 BD4+（blue） |
| 5 BD4- (blue,white) | 5 BD4- （blue,white） |
| 6 RX- (green) | 2 TX- （orange） |
| 7 BD3+ (brown,white) | 7 BD3（brown,white） |
| 8 BD3- (brown) | 8 BD3- （brown） |

### b. crossover network cable diagram

| HMI Ethernet terminal RJ45 | Ethernet Hub or Switch RJ45 |
|---|---|
| 1 TX+ (orange,white) | 1 RX+（orange,white） |
| 2 TX- （orange) | 2 RX- （orange） |
| 3 RX+ (green,white) | 3 TX+ （green,white） |
| 4 BD4+ (blue) | 4 BD4+ （blue） |
| 5 BD4- (blue,white) | 5 BD4- （blue,white） |
| 6 RX- (green) | 6 TX- （green） |
| 7 BD3+ (brown,white) | 7 BD3（brown,white） |
| 8 BD3- (brown) | 8 BD3- （brown） |

## 6.36 Koyo Corporation

### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| KOYO DIRECT | SM24-T | RS232 on the CPU unit | Koyo Direct |
| | DL06<br>DL105<br>DL230<br>DL240<br>DL250<br>DL350<br>DL450 | RS232 on the port1 | |
| | | RS232\RS422 on the port2 | |

### System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| KOYO DIRECT | SM24-T | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | | RS485-2 | Setting | Your owner cable |
| | DL05 | RS232 on the port1 | RS232 | Setting | Your owner cable |
| | DL06<br>DL105<br>DL230<br>DL240<br>DL250<br>DL350<br>DL450 | RS232 on the port2 | RS232 | Setting | Your owner cable |
| | | | RS485-4 | Setting | Your owner cable |

### Supported Device

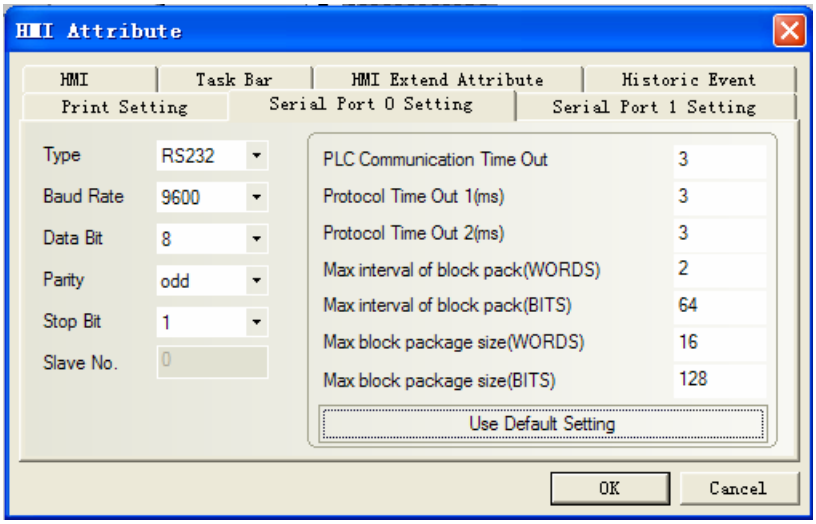
| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Input | I(X)0-477 | ------ | OOO | |
| Output | Q(Y)0-477 | ------ | OOO | |
| variable | M(C)0-377 | ------ | OOO | |
| Timer Status | T(T)0-177 | ------ | OOO | |
| Counter Status | C(CT)0-177 | ------ | OOO | |
| Data Register | ------ | R(V)0-7777 | OOOO | |

### PLC software setting

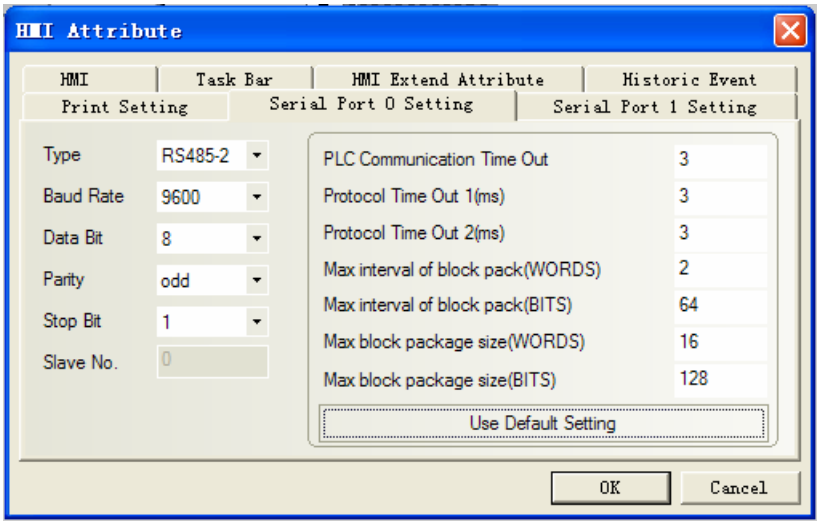
1. The security password function must be disabled.
2. The COM port must adopt K sequence protocol.
3. Set the switch of the CPU with working mode setting switch to the TERM state.

# Communication Setting

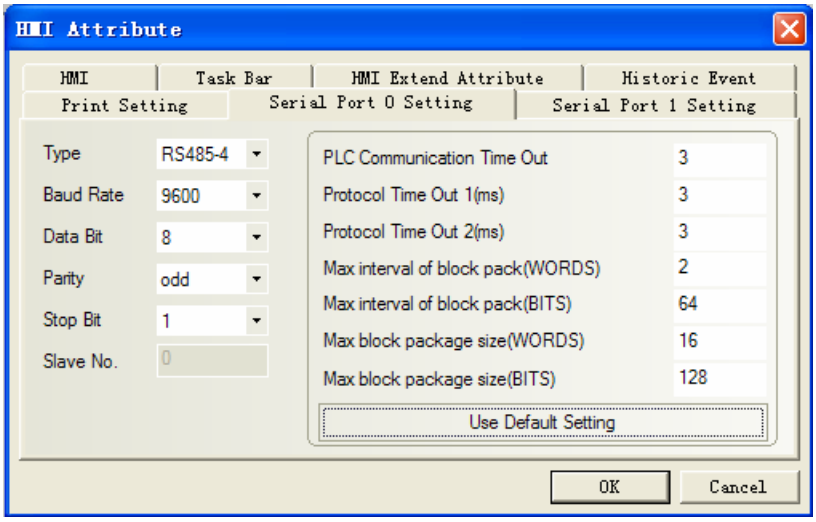
## KOYO series RS232 communication setting




## KOYO series RS485 communication setting

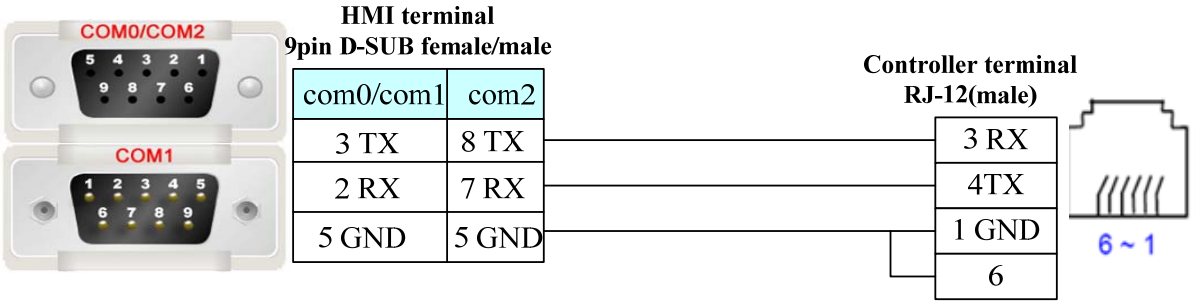



## KOYO DL06 series RS422 communication setting

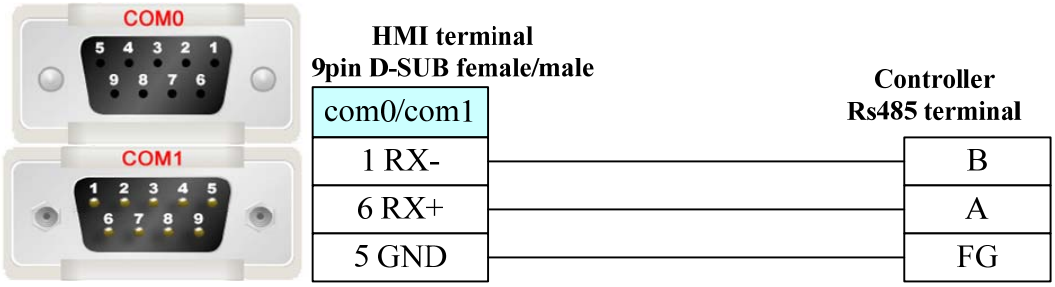



## Cable Diagram

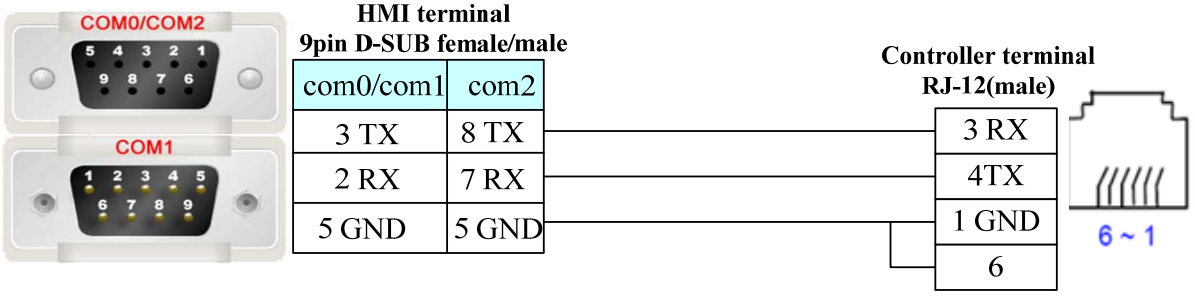
### KOYO SM24-T series RS232 communication cable

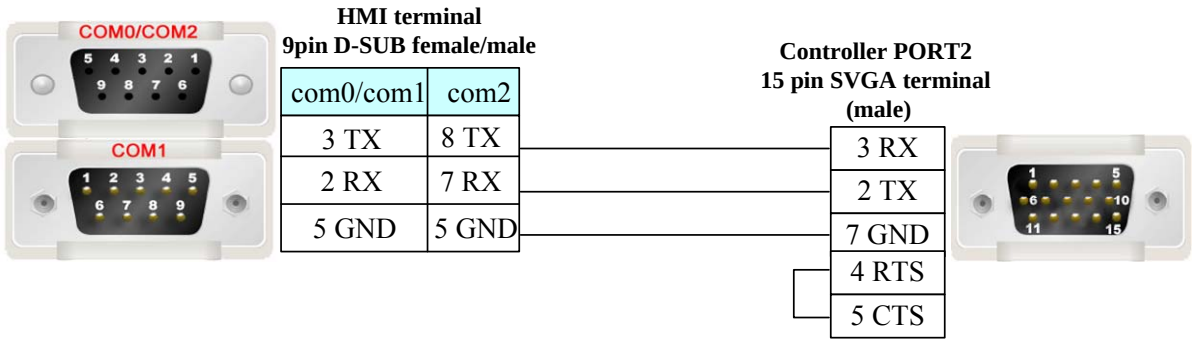



### KOYO SM24-T series RS485 communication cable

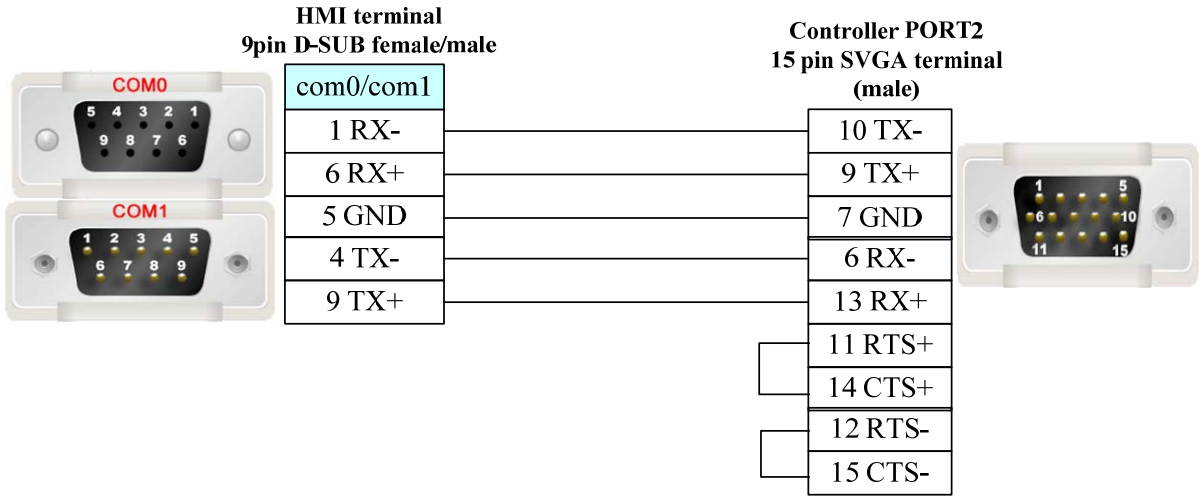



### KOYO DL06 series RS232 communication cable






## KOYO DL06 series RS422 communication cable




# 6.37 KTC Srdlink

## Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| SRD | SRD2211 | RS232 on CPU unit | KTC SRDLINK |
| | | RS485 on CPU unit | |
| COM | COM2023 | RS232 on CPU unit | |
| | | RS485 on CPU unit | |

## System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| SRD | SRD2211 | RS232 on CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 on CPU unit | RS485-2 | Setting | Your owner cable |

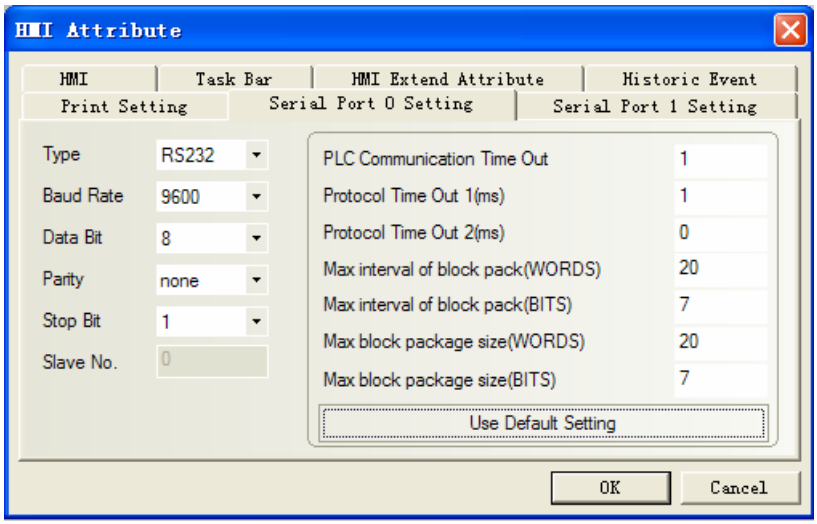
| | | | | | |
|---|---|---|---|---|---|
| COM | COM2023 | RS232 on CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 on CPU unit | RS485-2 | Setting | Your owner cable |

## Supported Device

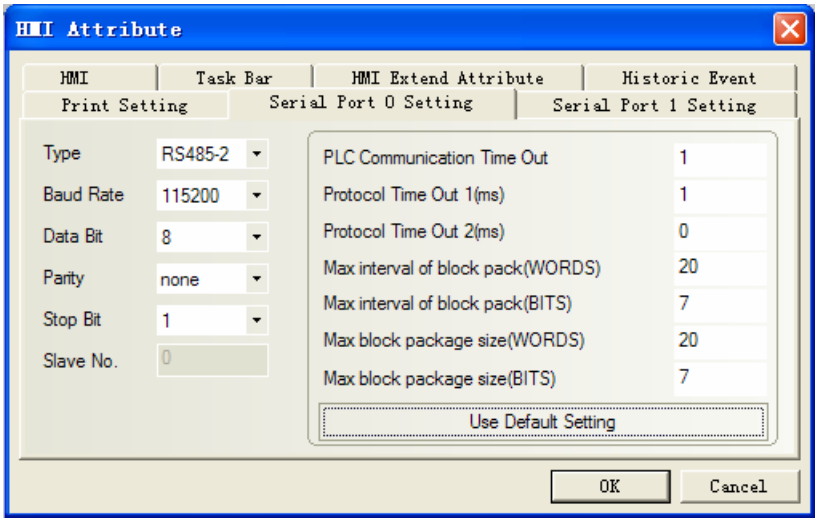
Please refer to the PLC manual for details.

## Communication Setting

### Ktc RS232 communication




### Ktc RS485-2 communication

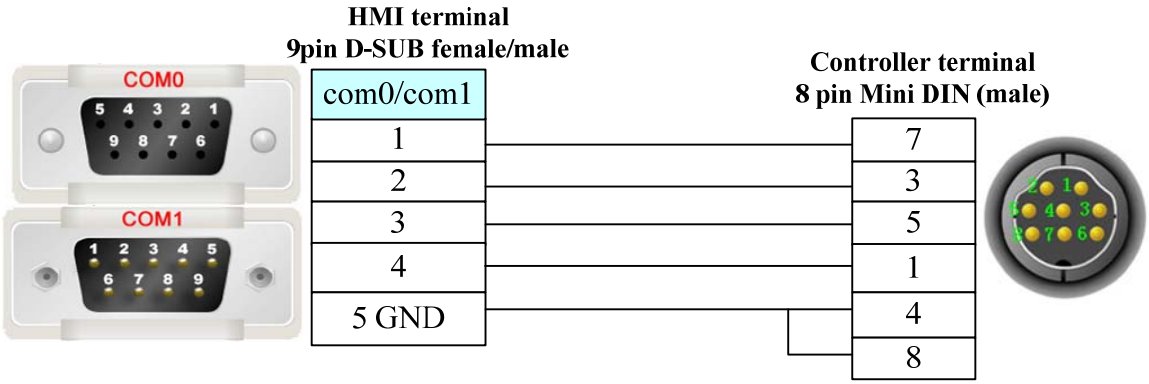



**Note:** Must modify communication parameter in the programming software.

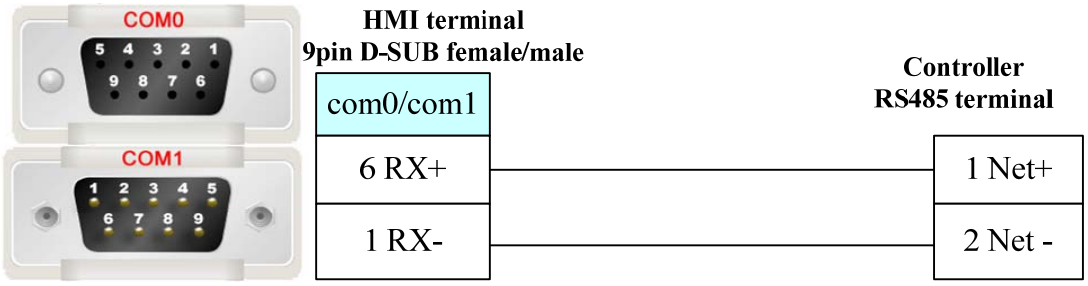
## Cable Diagram

### KTC RS232 communication cable

Direct connect (cable by KTC Corporation)




### KTC RS485 communication cable




## 6.38 KYL Slave

### Serial Communication

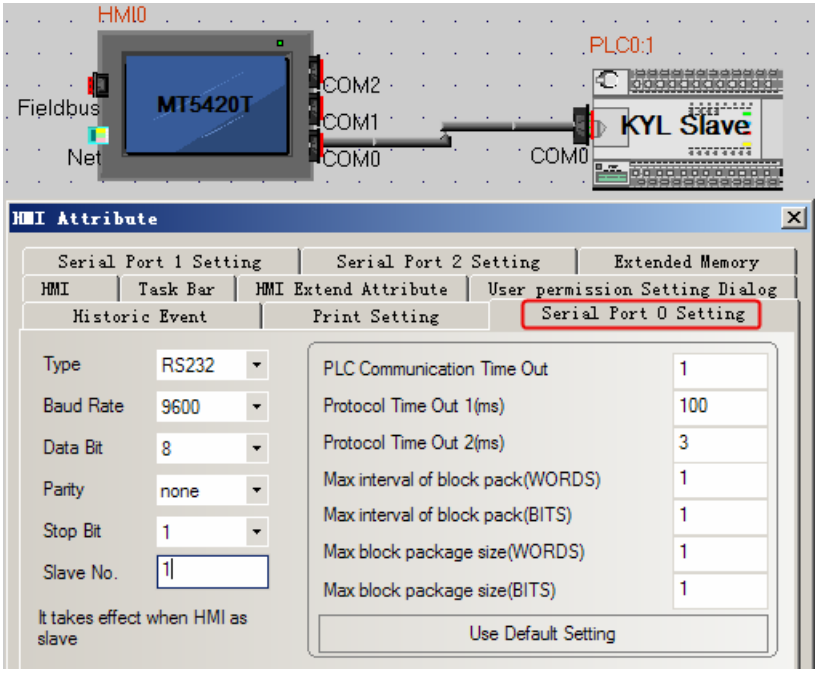
| Series | CPU | Link Module | Driver |
|---|---|---|---|
| KYL Slave | KYL | RS232 on the CPU unit | KYL Slave |

### System configuration

| Series | CPU | Link Module | COM Type | Parameter | Cable |
|---|---|---|---|---|---|
| KYL Slave | KYL | RS232 on the CPU unit | RS232 | Setting | Your owner cable |

### Communication Setting

**RS232**



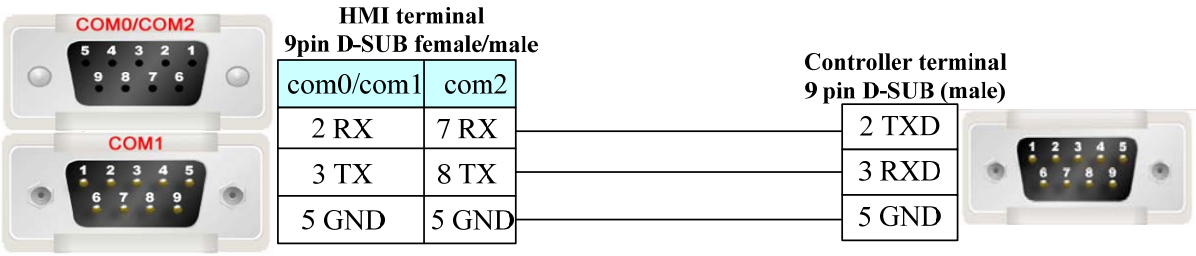

## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Group close instruction | LB0 | ------ | DD | |
| Remote valve open operation | LB1 | ------ | DD | Station:1; LB address |
| Remote valve close operation | LB2 | ------ | DD | |
| Remote valve address set operation | LB3 | ------ | DD | |
| Set gain cunrrent state | LB4 | ------ | DD | |
| flase valve open | LB8 | ------ | DD | |
| flase valve close | LB9 | ------ | DD | |
| valve open feedback | LB10 | ------ | DD | |
| valve close feedback | LB11 | ------ | DD | |
| valve uncap alarm | LB12 | ------ | DD | |
| valve hypopiesis alarm | LB13 | ------ | DD | |
| Show current valve state | LB14 | ------ | DD | |
| Show valve state | LB15 | ------ | DD | |
| Group close instruction | LB17 | ------ | DD | Staion:2, LB address(LB is on the base of 1station+16) |
| Remote valve open operation | LB18 | ------ | DD | |
| Remote valve close operation | LB19 | ------ | DD | |
| Remote valve address set operation | LB20 | ------ | DD | |
| Set gain cunrrent state | LB24 | ------ | DD | |
| flase valve open | LB25 | ------ | DD | |
| flase valve close | LB26 | ------ | DD | |
| valve open feedback | LB27 | ------ | DD | |
| valve close feedback | LB28 | ------ | DD | |
| valve uncap alarm | LB29 | ------ | DD | |

| | | | | |
|---|---|---|---|---|
| valve hypopiesis alarm | LB30 | ------ | DD | |
| Show current valve state | LB31 | ------ | DD | |

## Cable Diagram

### RS232




# 6.39 LENZE Inverter

## Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| Lecom A/B | EVF9323-EV | RS232 on the CPU unit | Lecom_AB |

## System configuration

| Series | CPU | Link Module | COM Type | Parameter | Cable |
|---|---|---|---|---|---|
| Lecom A/B | EVF9323-EV | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 on the CPU unit | RS485 | Setting | Your owner cable |

## Supported Device

Refer to the PLC software for details； Global drive control

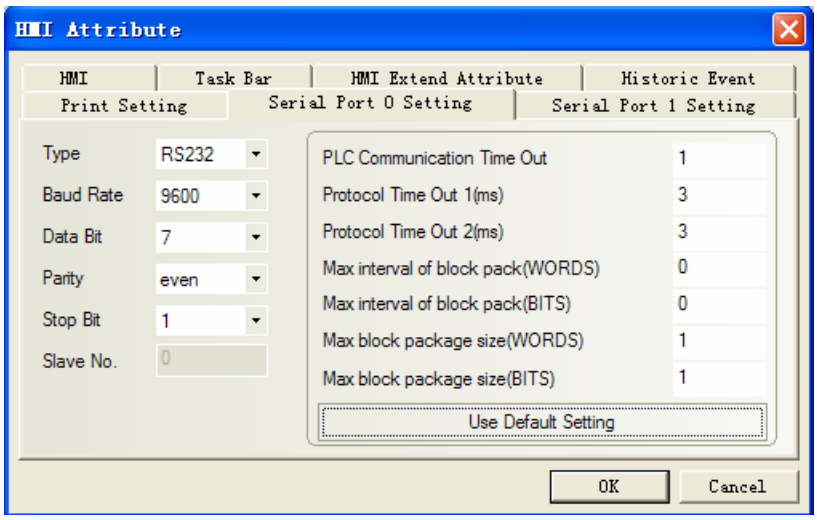
**Note：** code_H: Data type is HEX

code_F: Data type is Floating

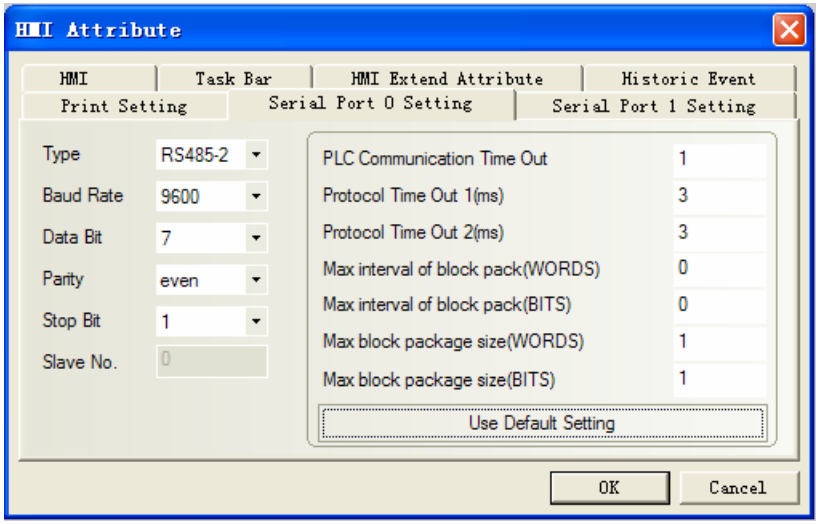
code_D: Data type is Decimal

## Communication Setting

### Lecom AB RS232 communication

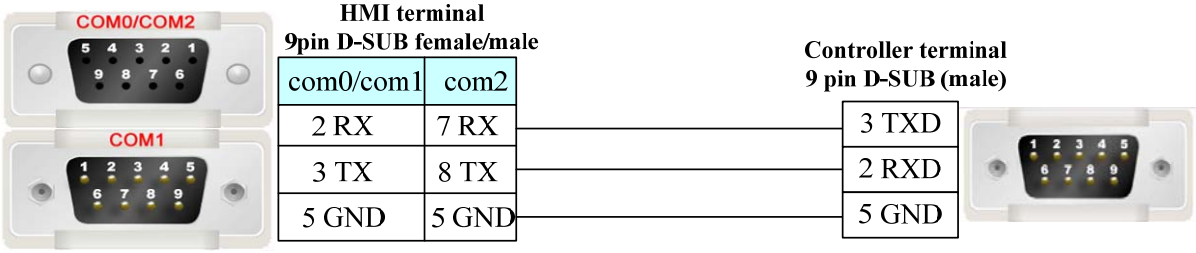



## Lecom AB RS485 communication

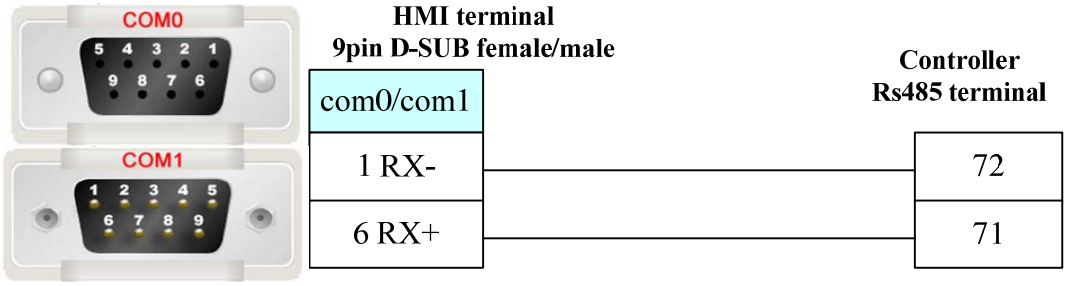



# Cable Diagram

## Lecom AB RS232 communication cable




## Lecom AB RS485 communication cable




## 6.40 LS Industrial Systems Co., Ltd.

### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| K120S | K7M-DR10UE<br>K7M-DR20U<br>K7M-DT30U<br>K7M-DT40U<br>K7M-DT60U | Port1 on CPU unit<br>Port2 on CPU unit | LG Master KxxxS<br>LG Master K-Cnet<br>LG Modbus RTU |
| XGB | XBC-DN64H<br>XBC-DR32H | RS232 on the CPU unit | LG XGT CPU Serial |
| | | RS232 on the channel1 | LG XGT_Cnet Series |
| | | RS485 on the channel2 | |

**Note:**

1. Switch the DIP2 to be ON, DIP1 to be OFF, when you use the LG Master K-cnet and LG Modbus Rtu drivers(It is not necessary to switch the dip for the LG Master KxxxS driver),
2. Non-support RS485 communication mode for the LG Master KxxxS driver;
3. Only Cnet protocol supports PLC station No.

### System configuration

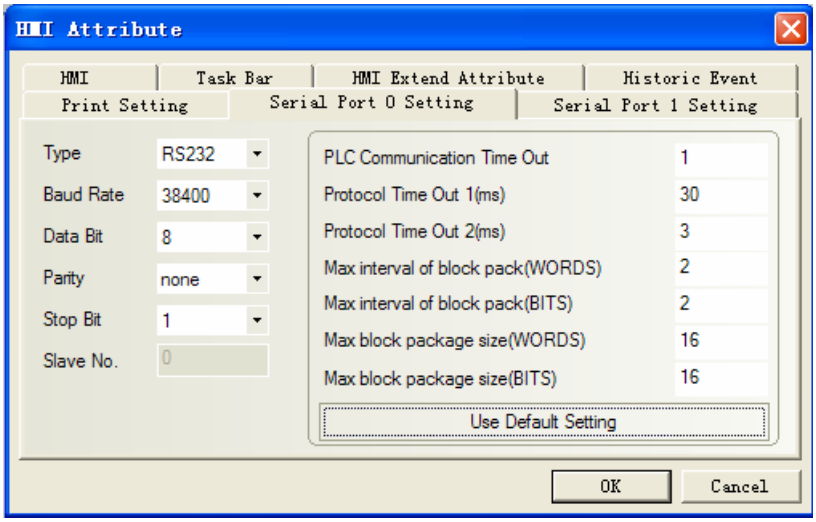
| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| K120S | K7M-DR10UE | Port1 on CPU unit | RS232 | Setting | Your owner cable |
| | | Port2 on CPU unit | RS485-2 | Setting | Your owner cable |
| | K7M-DR20U | Port1 on CPU unit | RS232 | Setting | Your owner cable |
| | | Port2 on CPU unit | RS485-2 | Setting | Your owner cable |
| XG | XBC-DN64H<br>XBC-DR32H | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS232 on the channel1 | RS232 | Setting | Your owner cable |
| | | RS485 on the channel2 | RS485 | Setting | Your owner cable |

### Communication Setting

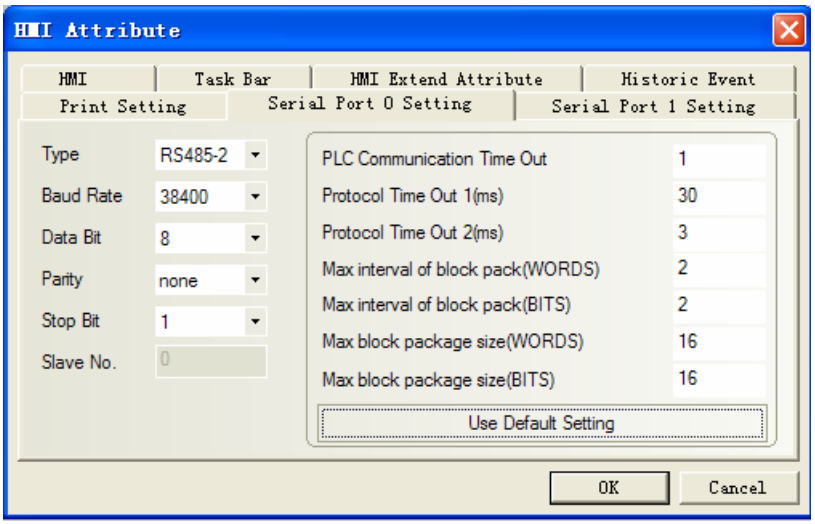
**LG Master K-cnet protocol** default communication:38400, 8, none , 1; station number:1

# HMI

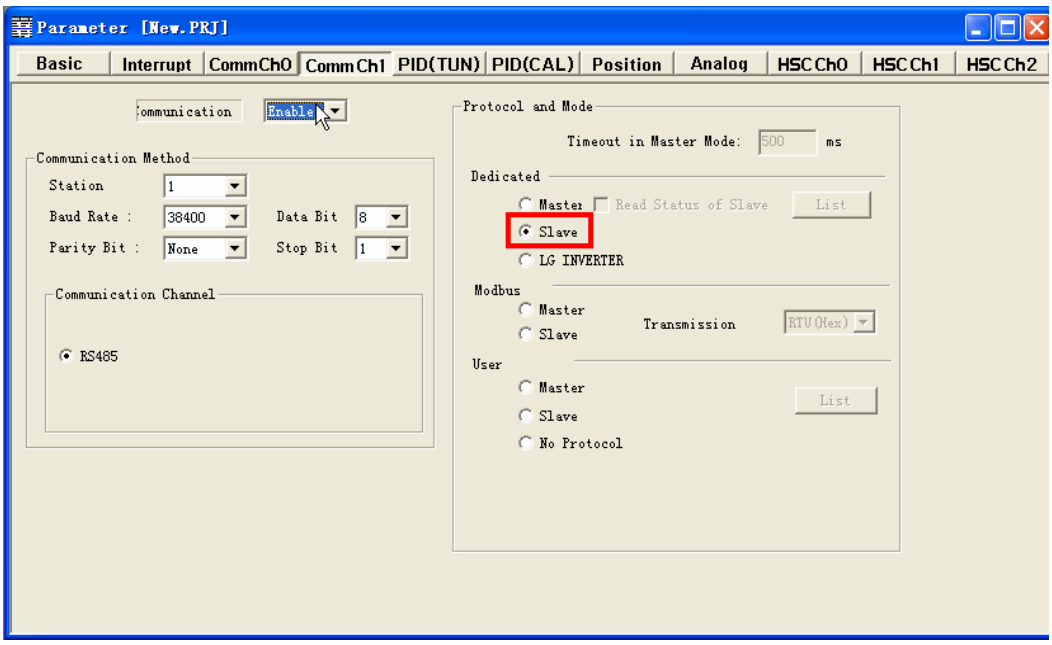
## RS232 communication




## RS485 communication




# PLC setting

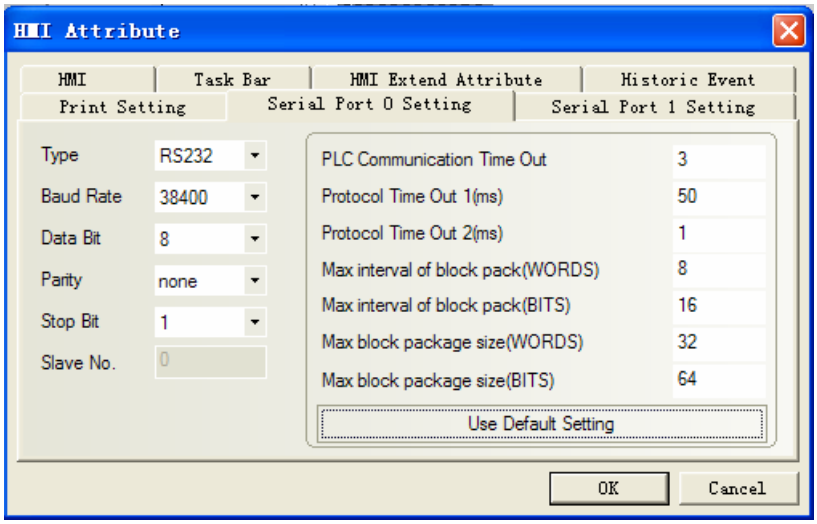



If click “Connect+Write+Run+Monitor Start”, it will give a “Cannot Change PLC Mode”. Need to let the run light go out by manual control, and then download. After download, let the run light keep on.

**Note:** connect with the software by crossover line

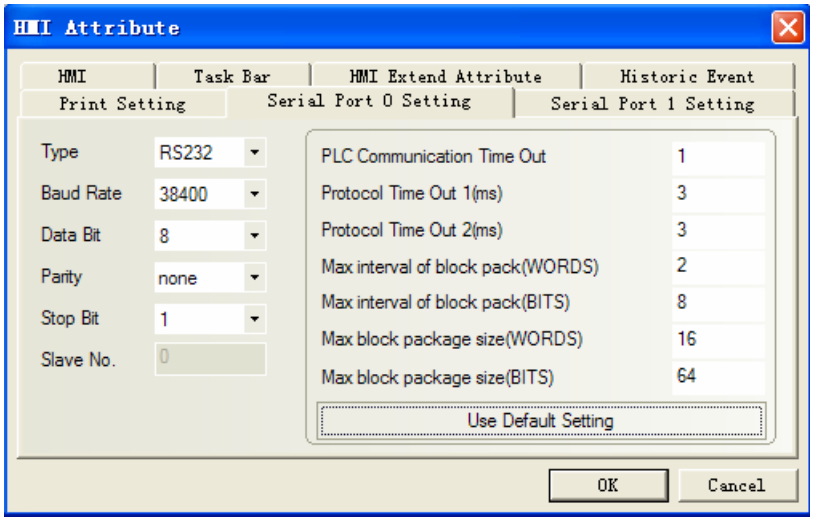
## K120S KxxxS RS232 communication

Note: Only support 38400 buadrate for the protocol

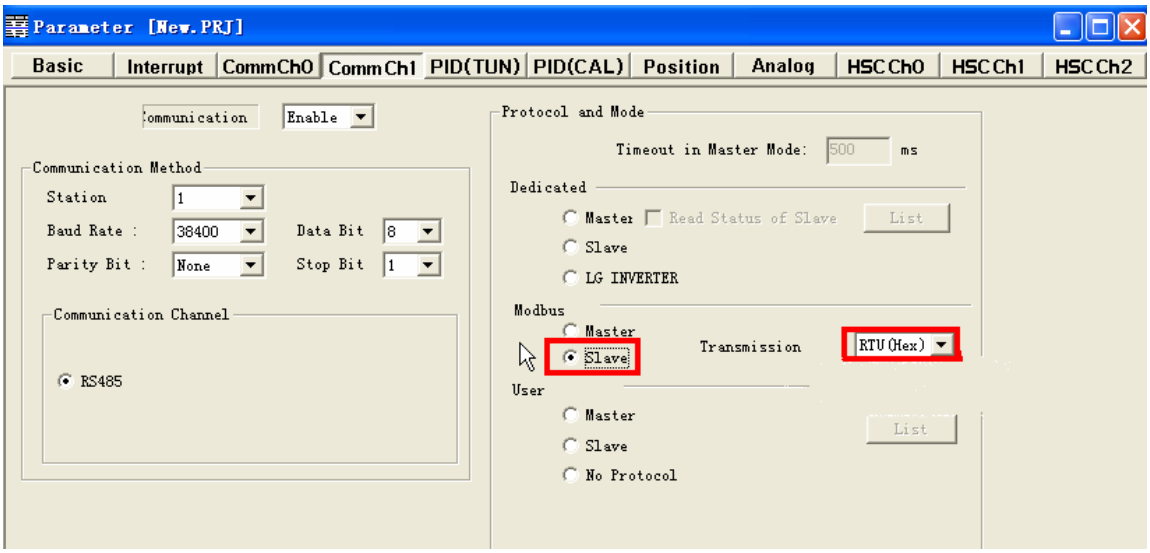



## LG Modbus Rtu communication

## HMI



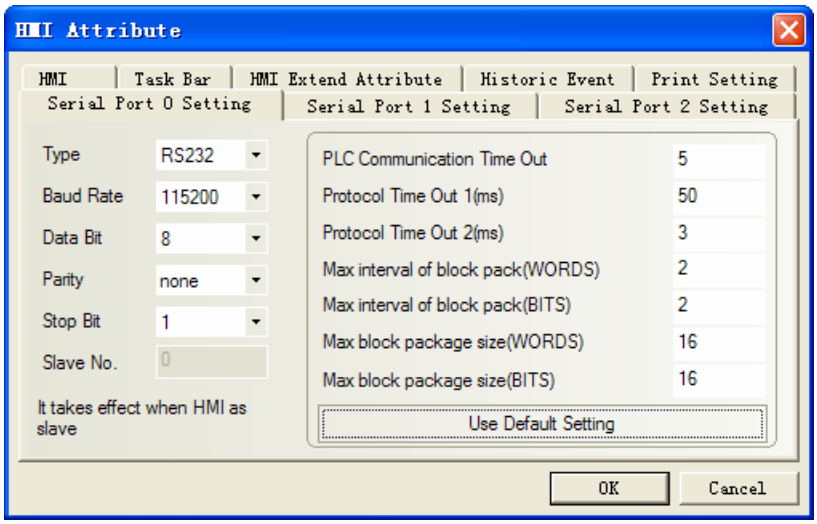

## PLC




**LG XGT CPU Serial protocol** default communication: 115200, 8, none, 1; station number: 0

Note: Only support 115200 buadrate for the protocol; station number disable.

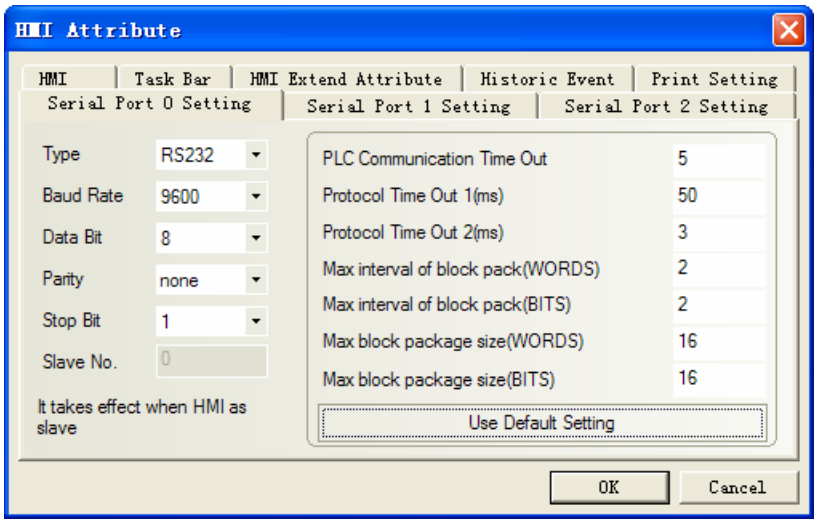
RS232



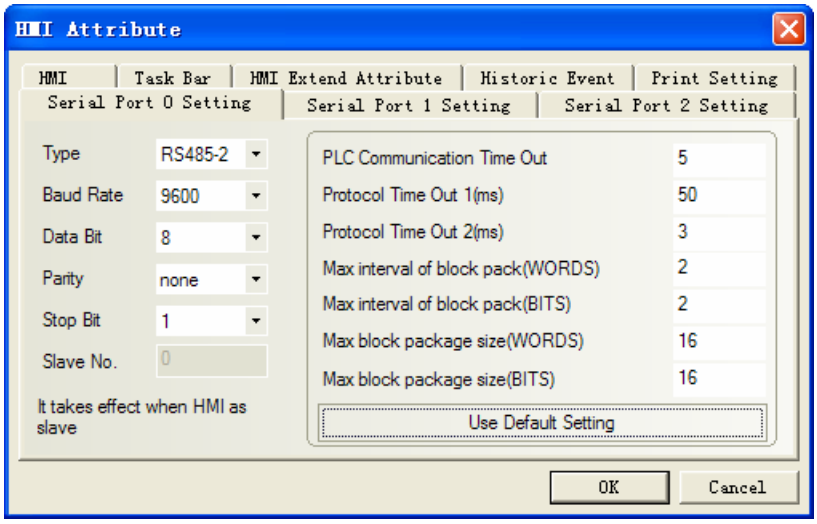

**LG XGT_Cnet Series protocol** default communication: 9600, 8, none, 1; station number: 0

**HMI**

RS232

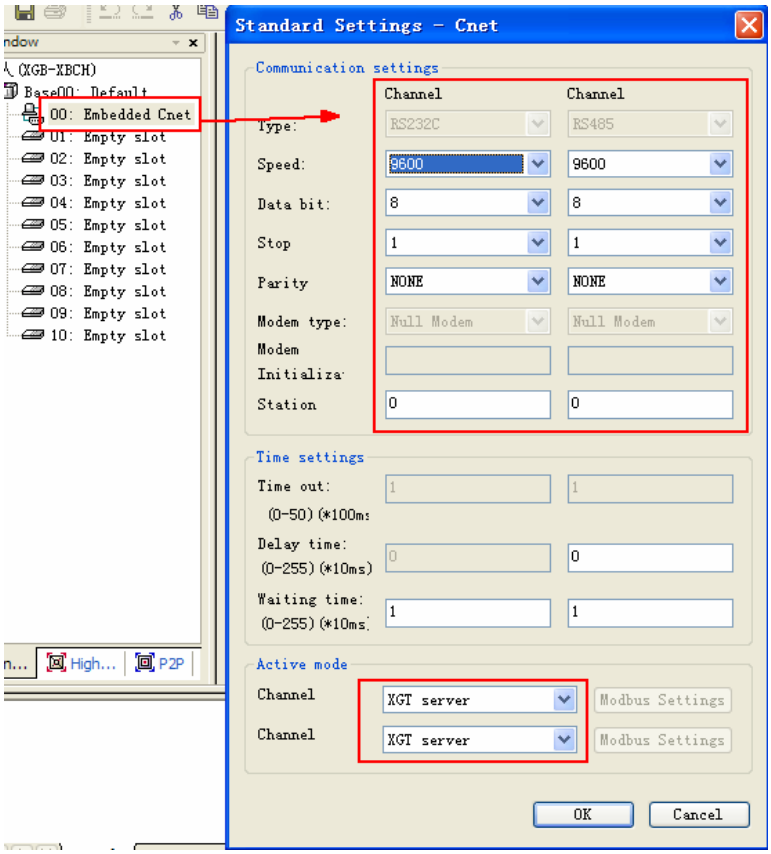



RS485



## XG5000 software setting

1. “Tools”---“Network Manager” set communication




2. Communicating in the OPR mode

# Supported Device

## K120S K7M-DR10UE

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| I/O Relay | P0.0-63.f | ------ | DD.H | |
| Auxiliary Relay | M0.0-191.f | ------ | DDD.H | |
| Link Relay | L0.0-63.f | ------ | DD.H | |
| Keep Relay | K0.0-31.f | ------ | DD.H | |
| Special Relay | F0.0-31.f | | DD.H | |
| Timer | ------ | T0-255 | DDD | |
| Counter | ------ | C0-255 | DDD | |
| Data Register | | D0-4999 | DDDD | |

**NOTE：** F address: 01 in the PLC corresponds to 0.1 in the ev5000;
F address: 2A in the PLC corresponds to 2.A in the ev5000.
Other register addresses, and so on.

## LG XGT_Cnet Series protocol

| Device | Bit Address | Word Address | Format |
|---|---|---|---|

| | | | |
|---|---|---|---|
| File Relay | R_bit 0.0-10239.F | ------ | DDDDD.H |
| Data Relay | D_bit 0.0-10239.F | ------ | DDDDD.H |
| Communication Relay | N_bit 0.0-5119.F | ------ | DDDD.H |
| Link Relay | L_bit 0.0-2047.F | ------ | DDDD.H |
| Index Relay | Z_bit 0.0-127.F | ------ | DDD.H |
| Counter Contact Relay | C_bit 0-1023 | ------ | DDDD |
| Timer Contact Relay | T_bit 0-1023 | ------ | DDDD |
| Special Relay | F_bit 0.0-1023.F | ------ | DDDD.H |
| Keep Relay | K_bit 0.0-4095.F | ------ | DDDD.H |
| Auxiliary Relay | M_bit 0.0-1023.F | ------ | DDDD.H |
| I/O Relay | P_bit 0.0-1023.F | ------ | DDDD.H |
| File Register | ------ | R_word 0-10239 | DDDDD |
| Data Register | ------ | D_ word 0-10239 | DDDDD |
| Communication Register | ------ | N_ word 0-5119 | DDDD |
| Link Register | ------ | L_ word 0-2047 | DDDD |
| Step Control Register | | S_ word 0-127 | DDD |
| Index Register | | Z_ word 0-127 | DDD |
| Counter | ------ | C_ word 0-1023 | DDDD |
| Timer | ------ | T_ word 0-1023 | DDDD |
| Special Register | ------ | F_ word 0-1023 | DDDD |
| Keep Register | ------ | K_ word 0-4095 | DDDD |
| Auxiliary Register | ------ | M_ word 0-1023 | DDDD |
| I/O Register | ------ | P_ word 0-1023 | DDDD |

**Note:** Register T_bit and C_bit can not communicate batch

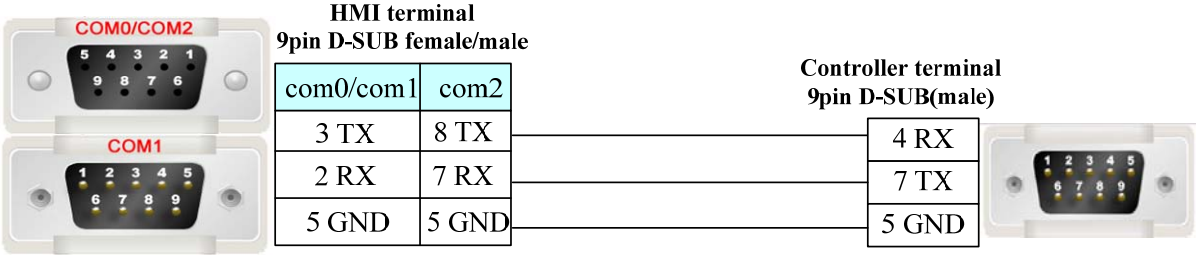
### LG XGT CPU Serial protocol

| Device | Bit Address | Word Address | Format |
|---|---|---|---|
| File Relay | R_bit 0.0-10239.F | ------ | DDDDD.H |
| Data Relay | D_bit 0.0-10239.F | ------ | DDDDD.H |
| Communication Relay | N_bit 0.0-5119.F | ------ | DDDD.H |
| Link Relay | L_bit 0.0-2047.F | ------ | DDDD.H |
| Index Relay | Z_bit 0.0-127.F | ------ | DDD.H |
| | ZR_bit 0.0-10239.F | ------ | DDDDD.H |
| Counter Contact Relay | C_bit 0-1023 | ------ | DDDD |
| Timer Contact Relay | T_bit 0-1023 | ------ | DDDD |
| Special Relay | F_bit 0.0-1023.F | ------ | DDDD.H |
| Keep Relay | K_bit 0.0-4095.F | ------ | DDDD.H |

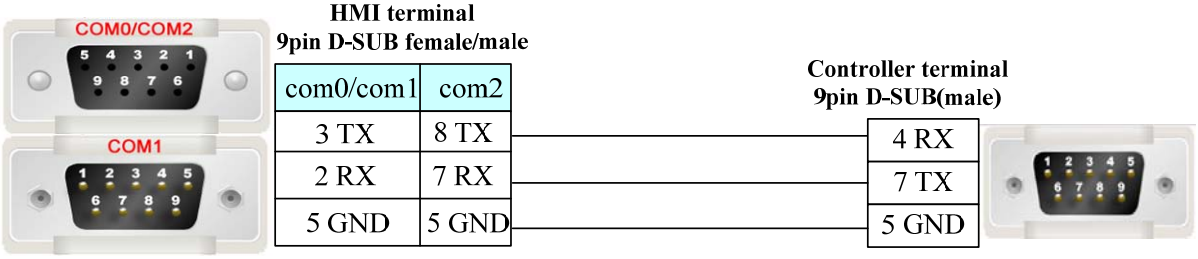
| | | | |
|---|---|---|---|
| Auxiliary Relay | M_bit 0.0-1023.F | ------ | DDDD.H |
| I/O Relay | P_bit 0.0-1023.F | ------ | DDDD.H |
| File Register | ------ | R 0-10239 | DDDDD |
| Data Register | ------ | D 0-10239 | DDDDD |
| Communication Register | ------ | N 0-5119 | DDDD |
| Link Register | ------ | L 0-2047 | DDDD |
| Step Control Register | ------ | S 0-127 | DDD |
| Index Register | ------ | Z 0-127 | DDD |
| | ------ | ZR 0-10239 | DDDDD |
| Counter Set Value | ------ | C_ SV 0-1023 | DDDD |
| Timer Set Value | ------ | T_ SV 0-1023 | DDDD |
| Counter Current Value | ------ | C_ CV 0-1023 | DDDD |
| Timer Current Value | ------ | T_ CV 0-1023 | DDDD |
| Special Register | ------ | F 0-1023 | DDDD |
| Keep Register | ------ | K 0-4095 | DDDD |
| Auxiliary Register | ------ | M 0-1023 | DDDD |
| I/O Register | ------ | P 0-1023 | DDDD |

# Cable Diagram

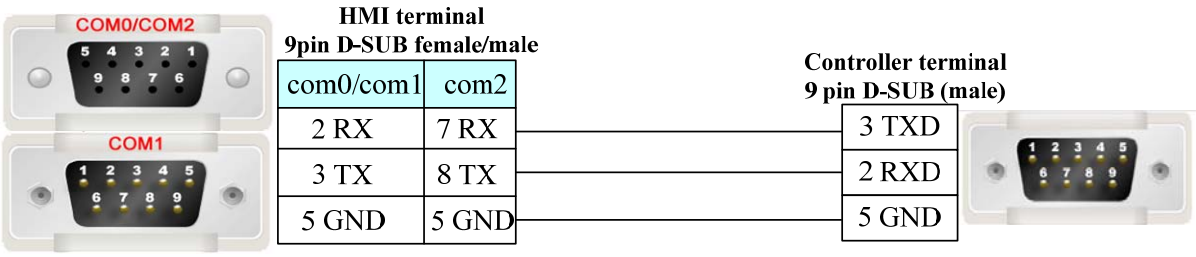
## K120S K-cnet protocol RS232 communication cable



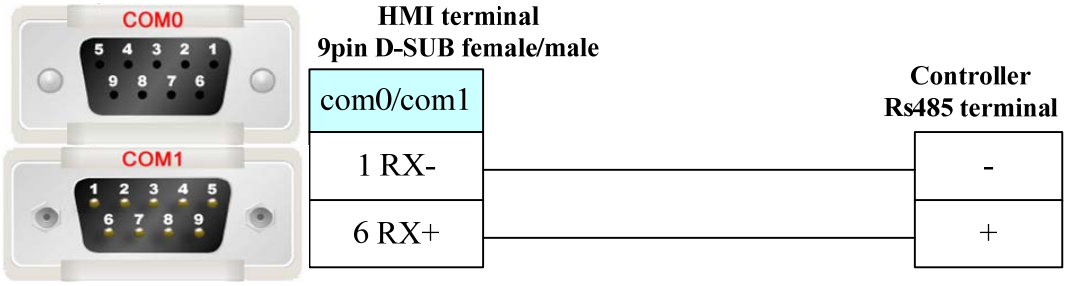

## LG Modbus Rtu protocol RS232 communication cable



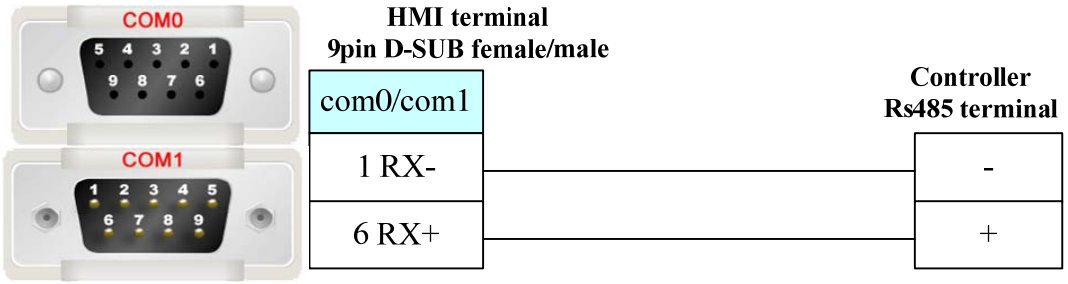

## K120S KxxxS protocol RS232 communication cable




## K120S K-cnet protocol RS485-2 communication cable

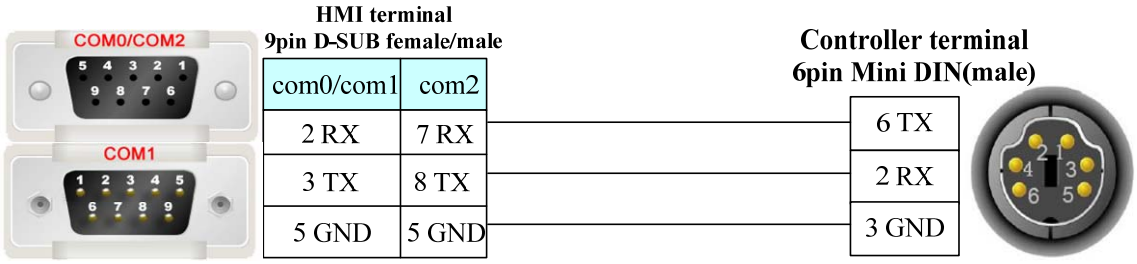



## LG Modbus Rtu protocol RS485-2 communication cable



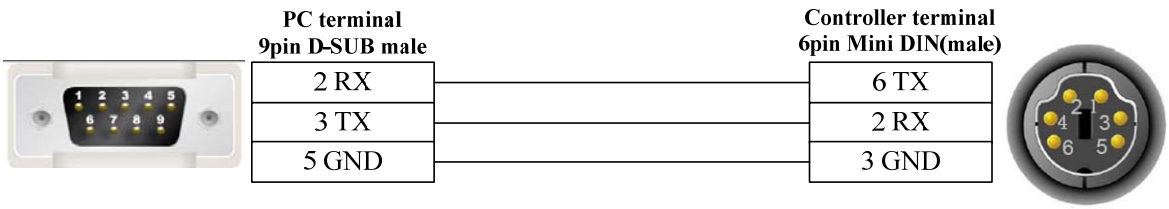

## LG XGT CPU Serial protocol

RS232 communication cable




## LG XGT_Cnet Series protocol

RS232 programming cable



RS232 communication cable

**HMI terminal**
**9pin D-SUB female/male**

| com0/com1 | com2 |
|---|---|
| 2 RX | 7 RX |
| 3 TX | 8 TX |
| 5 GND | 5 GND |

**Controller terminal**

| |
|---|
| TX |
| RX |
| SG |

RS485 communication cable

**HMI terminal**
**9pin D-SUB female/male**

| com0/com1 |
|---|
| 1RX- |
| 6RX+ |
| 5 GND |

**Controller terminal**

| |
|---|
| 485- |
| 485+ |
| SG |

## 6.41 LUST

### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| CDE34.008 | CDE34.008 | RS232 on the CPU unit | LustBus |

### Network communication (direct online simulation disable)

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| ServoOne junior | Lust | ETH on the CPU | Lust Ethernet Slave |

### Serial System configuration

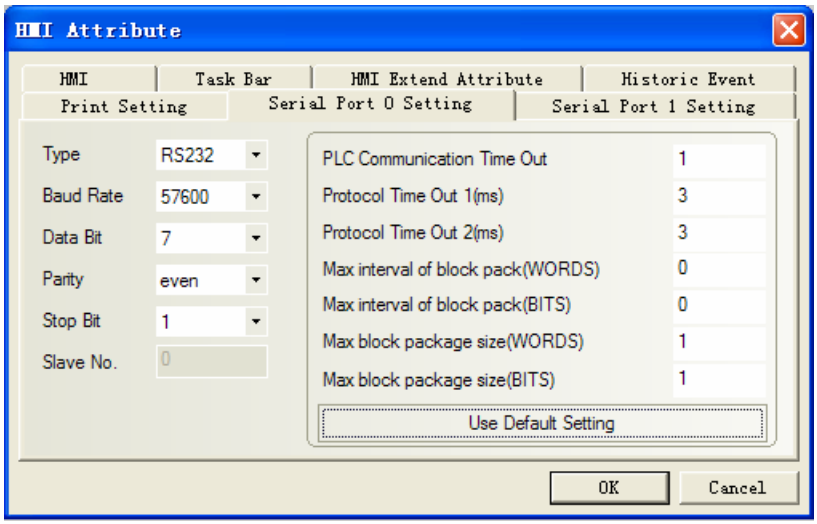
| Series | CPU | Link Module | COM Type | Parameter | Cable |
|---|---|---|---|---|---|
| CDE34.008 | CDE34.008 | RS232 on the CPU unit | RS232 | Setting | Your owner cable |

### Network System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| ServoOne junior | Lust | ETH on the CPU | ETH | Setting | Your owner cable |

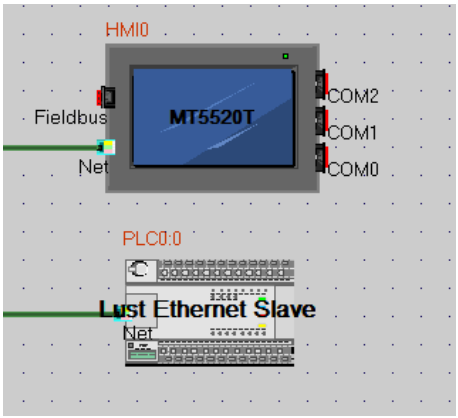
### Serial Communication Setting

**Lustbus RS232 default communication:** 57600, 7, even, 1; station: 1

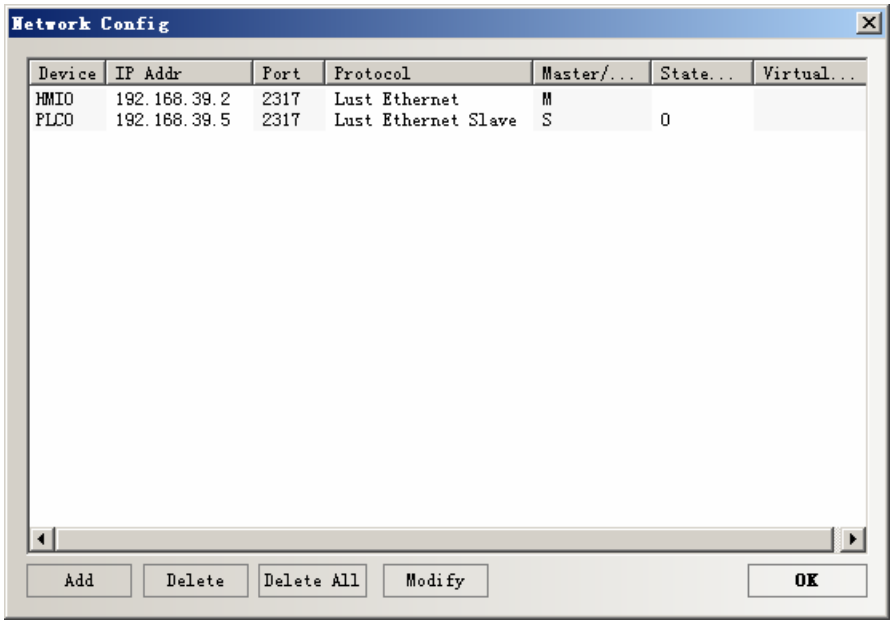



# Network Communication Setting

## HMI




## Network configuration



## The way to change IP of Servo drive system

Plug the 24-volt power supply on the X2, plug the network cable on the X9.

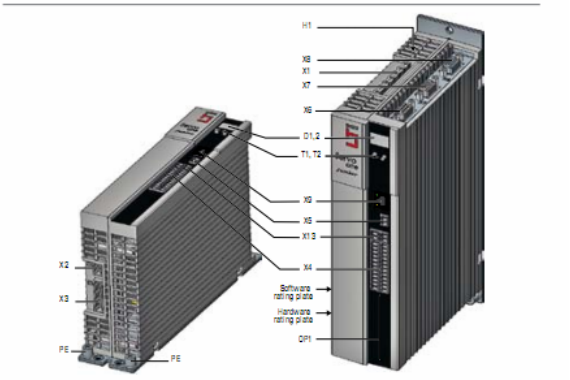



*Figure 3.1 Layout*

| No. | Designation | No. | Designation |
|---|---|---|---|
| D1, D2 | 7-segment display | X4 | Control terminals |
| H1 | DC link voltage indicator LED | X5 | Motor temperature monitoring |
| OP1 | Installation space for option 1 (Communication) | X6 | Resolver connection |
| PE | Protective conductor connection | X7 | Connection for high-resolution encoders |
| T1, T2 | Button | X8 | Option 2 - Technology |
| X1 | Power connection | X9 | Ethernet port |
| X2 | Connection of control supply $U_V$ | X13 | Connection of motor brake |
| X3 | AC mains connection | | |

*Table 3.1 Key to layout*

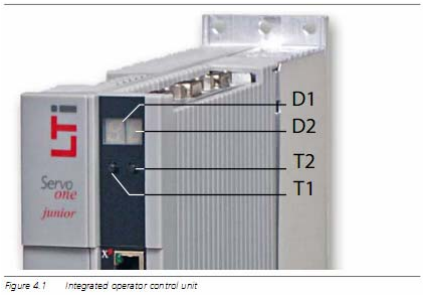



*Figure 4.1 Integrated operator control unit*

Refer to the map, press the T1 or T2 to modify the IP

| Menu level 1 | 2 | Para-meter | Value range | Meaning | Explanation |
|---|---|---|---|---|---|
| IP | Iu | b0 | 00..FF | IP address udate Byte 0 | Setting of byte 0 of the IP address in hexadecimal format (e.g. "05" for 192.168.39.**5**) |
| | | b1 | 00..FF | IP address udate Byte 1 | Setting of byte 1 of the IP address in hexadecimal format (e.g. "27" for 192.168.**39**.5) |
| | | b2 | 00..FF | IP address udate Byte 2 | Setting of byte 2 of the IP address in hexadecimal format (e.g. "A8" for 192.**168**.39.5) |
| | | b3 | 00..FF | IP address udate Byte 3 | Setting of byte 3 of the IP address in hexadecimal format (e.g. "C0" for **192**.168.39.5) |
| | Ir | - | - | IP reset to factory setting | Reset IP address to factory default (192.168.39.5) |
| | Su | b0 | 00..FF | Subnetmask udate Byte 0 | Setting of byte 0 of the subnet mask in hexadecimal format (e.g. "00" for 255.255.255.**0**) |
| | | b1 | 00..FF | Subnetmask udate Byte 1 | Setting of byte 1 of the subnet mask in hexadecimal format (e.g. "FF" for 255.255.**255**.0) |
| | | b2 | 00..FF | Subnetmask udate Byte 2 | Setting of byte 2 of the subnet mask in hexadecimal format (e.g. "FF" for 255.**255**.255.0) |
| | | b3 | 00..FF | Subnetmask udate Byte 3 | Setting of byte 3 of the subnet mask in hexadecimal format (e.g. "FF" for **255**.255.255.0) |
| | Sr | - | - | Subnetmask reset to factory setting | Reset subnet mask to factory default setting (255.255.255.0) |
| | Po | - | 0..3 *or* - - | Transmit power | Setting of fibre-optic power output (only with SERCOS II option), otherwise display "- -" |

*Table 4.12 IP address menu*

| Parameter | | b3 | b2 | b1 | b0 |
|---|---|---|---|---|---|
| Initial IP | int | 192 | 168 | 39 | 5 |
| | hex | C0 | A8 | 27 | 05 |
| Modified IP | int | 192 | 168 | 100 | 240 |
| | hex | C0 | A8 | 64 | F0 |

| Parameter | | b3 | b2 | b1 | b0 |
|---|---|---|---|---|---|
| Initial IP | int | 192 | 168 | 39 | 5 |
| | hex | C0 | A8 | 27 | 05 |
| Modified IP | int | 192 | 168 | 100 | 240 |
| | hex | C0 | A8 | 64 | F0 |

The following description of specific processes, after the servo power

| D1 | D2 |
|---|---|
| 5. | 1. |

Press key T1 of about 1s

| D1 | D2 |
|---|---|
| P | R |

Press key T1 of about 1s

| D1 | D2 |
|---|---|
| I | P |

Press key T2 of about 1s

| D1 | D2 |
|---|---|
| l | u |

Press key T2 of about 1s

| D1 | D2 |
|---|---|
| b | 0 |

Press key T2 of about 1s

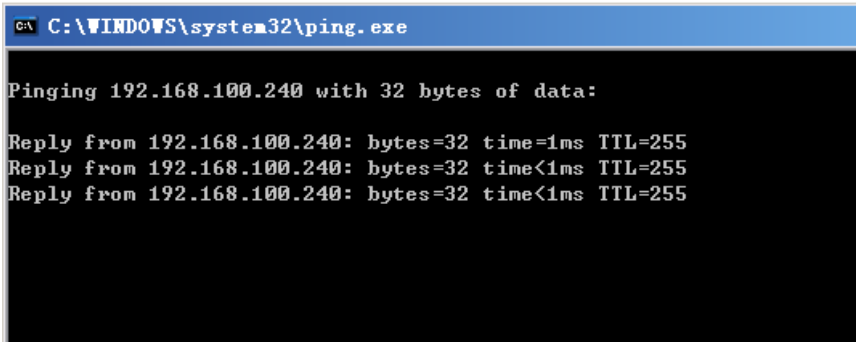
| D1 | D2 |
|---|---|
| b | 0 |

1s at about T2 button to display the value of d0, the initial value is 05

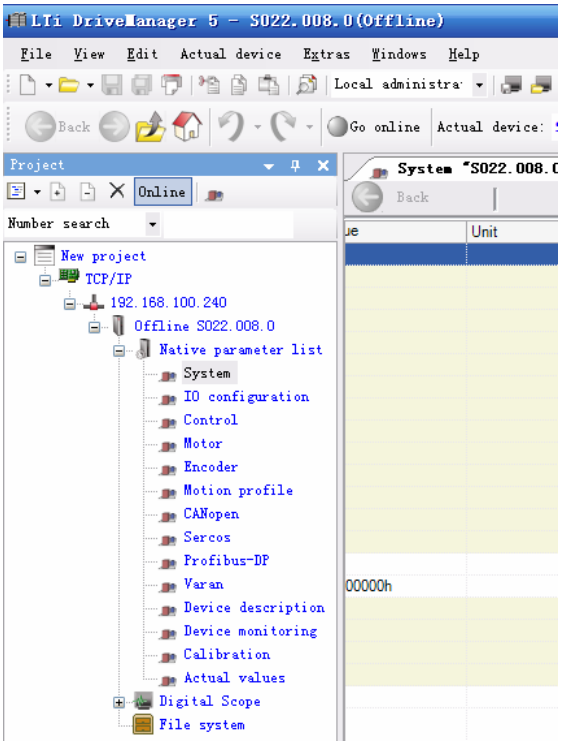
| D1 | D2 |
|---|---|
| 0 | 5 |

Press T1, respectively, and T2, you can adjust the value of b0, After release, while at T1 and T2 key until the display or can be, Then press and T1 and T2, also show b0, then press the key T1 of about 1s,can switch to b2, empathy can be modified the value of b2, b3, b4, modify the good, the same press T1 and T2 until display “or” (where press T1 and T2 at the same time is the key to save and exit).

Well, after the change, restart the power, and then ping.


C:\WINDOWS\system32\ping.exe
Pinging 192.168.100.240 with 32 bytes of data:
Reply from 192.168.100.240: bytes=32 time=1ms TTL=255
Reply from 192.168.100.240: bytes=32 time<1ms TTL=255
Reply from 192.168.100.240: bytes=32 time<1ms TTL=255

After the software is connected



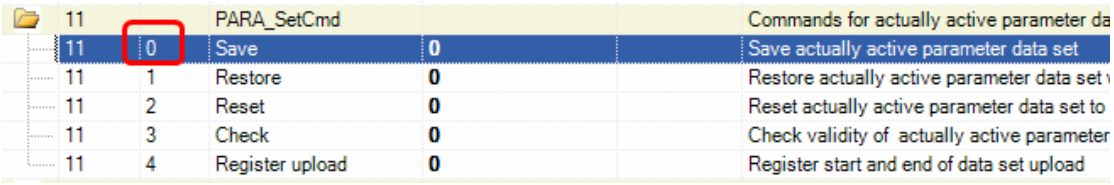
## Supported Device

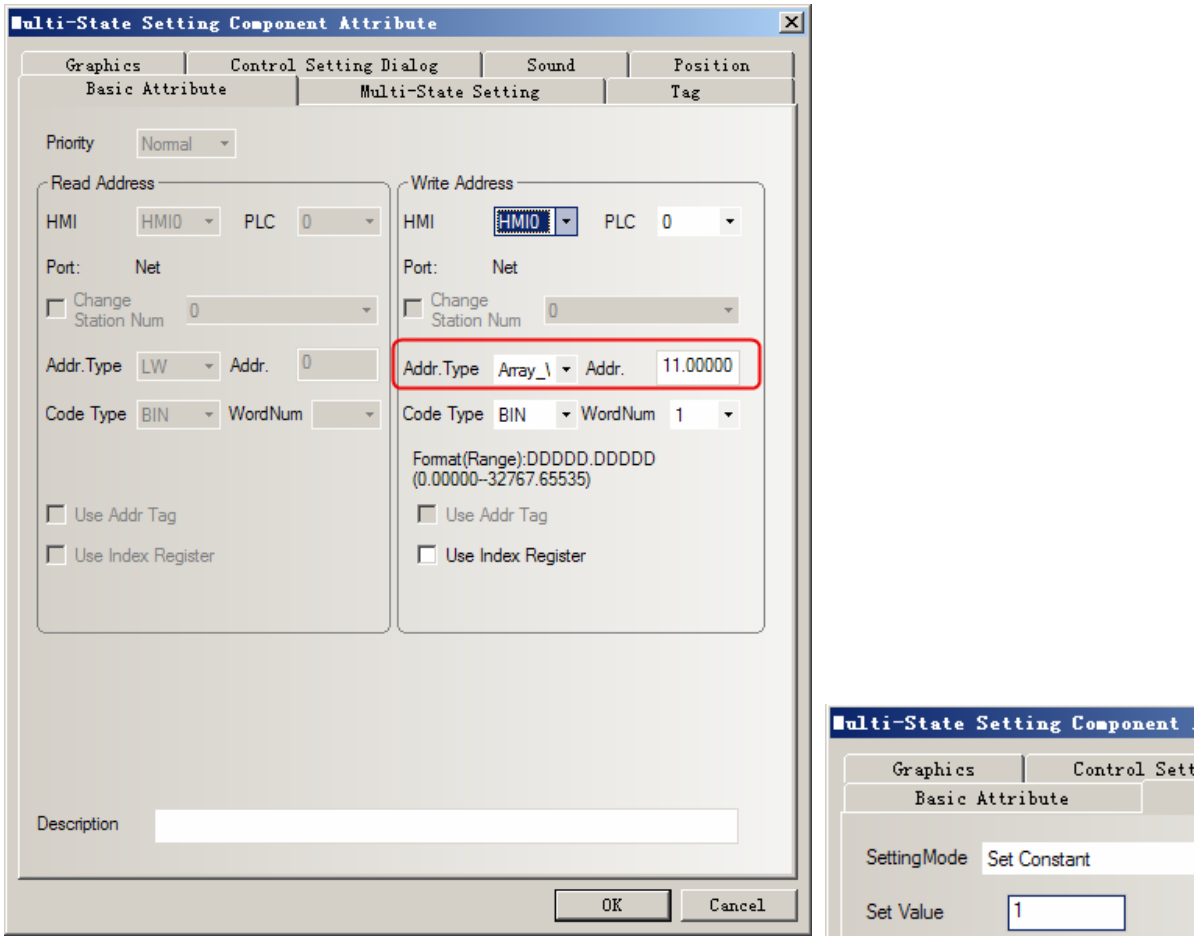
Refer to the Controller software for details: DriveManager for c-line drives

### ServoOne junior

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Array_DWord32 | | 0.00000-32767.65535 | DDDDD.DDDDD | |
| Array_DWord16 | | 0.00000-32767.65535 | DDDDD.DDDDD | |
| DWord32 | | 0-32767 | DDDDD | |
| Word16 | | 0-32767 | DDDDD | |

Note: Array_DWord32/Array_DWord16 the address format is the primary address + decimal point + sub-address, such as the address for the save as shown below, the main address is 11, sub-address is 0, the data type is int16, then the touch screen corresponding to the address is Array_DWord16 11.00000.


11 PARA_SetCmd Commands for actually active parameter da
11 0 Save 0 Save actually active parameter data set
11 1 Restore 0 Restore actually active parameter data set
11 2 Reset 0 Reset actually active parameter data set to
11 3 Check 0 Check validity of actually active parameter
11 4 Register upload 0 Register start and end of data set upload




The primary address is 11, sub-address is 1, the data type is int16, then the touch screen corresponding to the address is Array_DWord16 11.00001. In addition, INT8 address, select Word16, but also through the

conversion can be displayed, as should show -3, while the display 253, which can be done in the macro data conversion, so 253-256 = -3, that is in need of special address type conversion .

# Cable Diagram

## Lustbus RS232 communication cable

| HMI terminal 9pin D-SUB female/male | |
|---|---|
| com0/com1 | com2 |
| 2 RX | 7 RX |
| 3 TX | 8 TX |
| 5 GND | 5 GND |

| Controller terminal 9 pin D-SUB (male) |
|---|
| 2 TXD |
| 3 RXD |
| 5 GND |

## Ethernet communication protocol cable

Connecting PC and HMI use cross-ruling; use Cross-over cable or cross-ruling via hub or switch.

a. cross-ruling cable diagram:

| HMI Ethernet terminal RJ45 | Controller terminal RJ45 |
|---|---|
| 1 TX+ (orange,white) | 3 RX+ （green,white） |
| 2 TX- （orange) | 6 RX- （green） |
| 3 RX+ (green,white) | 1 TX+（orange,white） |
| 4 BD4+ (blue) | 4 BD4+（blue） |
| 5 BD4- (blue,white) | 5 BD4- （blue,white） |
| 6 RX- (green) | 2 TX- （orange） |
| 7 BD3+ (brown,white) | 7 BD3+ (brown,white) |
| 8 BD3- (brown) | 8 BD3- （brown） |

b. cross-over cable cable diagram:

| HMI Ethernet terminal RJ45 | Ethernet Hub or Switch RJ45 |
|---|---|
| 1 TX+ (orange,white) | 1 RX+（orange,white） |
| 2 TX- ( orange) | 2 RX- （orange） |
| 3 RX+ (green,white) | 3 TX+ （green,white） |
| 4 BD4+ (bule) | 4 BD4+ （bule） |
| 5 BD4- (bule,white) | 5 BD4- （bule,white） |
| 6 RX- (green) | 6 TX- （green） |
| 7 BD3+ (brown,white) | 7 BD3（brown,white） |
| 8 BD3- (brown) | 8 BD3- （brown） |

# 6.42 Matsushita Electric Corporation

## Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| FP | FP Σ | Tool port on the Control unit | Matsushita FP |
| | | AFPG801 | |
| | | AFPG802 | |
| | | AFPG803 | |
| | | AFPG806 | |
| | FP0<br>FP1<br>FP-M | Tool port on the Control unit | |
| | | RS232C port on the Control unit | |
| | FP2<br>FP2SH | Tool port on the Control unit | |
| | | RS232C port on the Control unit | |
| | | AFP2462 | |
| | | AFP2465+(AFP2803,AFP2804, FP2805) | |
| | FP3 | Tool port on the Control unit | |
| | | AFP3462 | |
| | FP-e | Tool port on the Control unit | |
| | | AFPE224300 | |
| | | AFPE224302 | |
| | | AFPE224305 | |
| | | AFPE214322 | |
| | | AFPE214325 | |
| | FP10SH<br>FP10S | Tool port on the Control unit | |
| | | RS232C port on the Control unit | |
| | | AFP3462 | |
| | FP-X | RS232C port on the Control unit | |

## System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| FP | FP | Tool port on the Control unit | RS232C | Setting | Your owner cable |
| | | AFPG801 | | | Your owner cable |
| | | AFPG802 | | | |
| | | AFPG806 | | | |
| | | AFPG803 | RS485(2 wire) | Setting | Your owner cable |
| | | AFPG806 | | | |
| | FP0 | Tool port on the Control unit | RS232C | Setting | Your owner cable |
| | | RS232C port on the Control unit | | | Your owner cable |
| | FP1<br>FP-M | Tool port on the Control unit | RS232C | Setting | Your owner cable |
| | | RS232C port on the Control unit | | | Your owner cable |

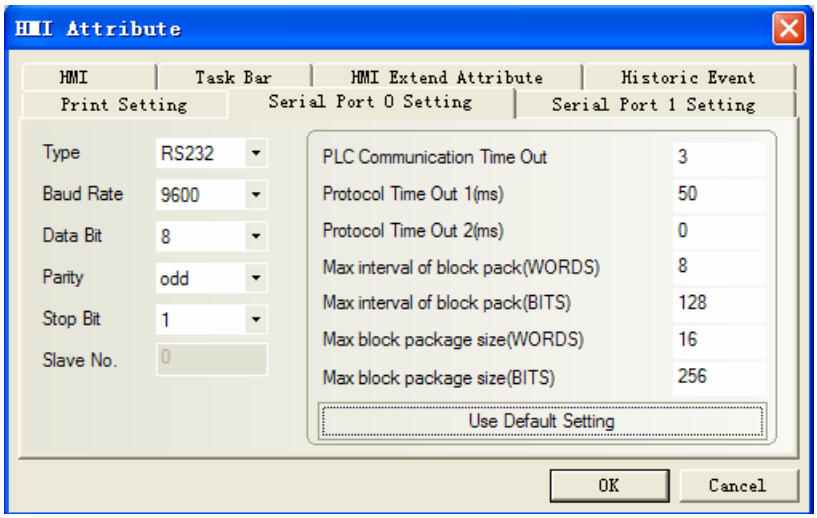
| | | | | | | |
|---|---|---|---|---|---|---|
| | FP2<br>FP2SH | Tool port on the Control unit | | RS232C | Setting | Your owner cable |
| | | RS232C port on the Control unit | | | | Your owner cable |
| | | AFP2462 | | | | |
| | | AFP2465 | AFP2803 | | | |
| | | | AFP2804 | RS422(4 wire) | Setting | Your owner cable |
| | | | AFP2805 | RS485(2 wire) | Setting | Your owner cable |
| | FP3 | Tool port on the Control unit | | RS232C | Setting | Your owner cable |
| | | AFP3462 | | | | Your owner cable |
| | | AFP3463 | | RS422(4 wire) | Setting | Your owner cable |
| | FP-e | Tool port on the Control unit | | RS232C | Setting | Your owner cable |
| | | AFPE224300 | | RS232C | | Your owner cable |
| | | AFPE214325 | | | | |
| | | AFPE224305 | | | | |
| | | AFPE224302 | | RS485(2 wire) | Setting | Your owner cable |
| | | AFPE214322 | | | | |
| | FP10SH<br>FP10S | Tool port on the Control unit | | RS232C | Setting | Your owner cable |
| | | RS232C port on the Control unit | | | | Your owner cable |
| | | AFP3462 | | | | |
| | FP-X | RS232C port on the Control unit | | RS232C | Setting | Your owner cable |

**Node：**

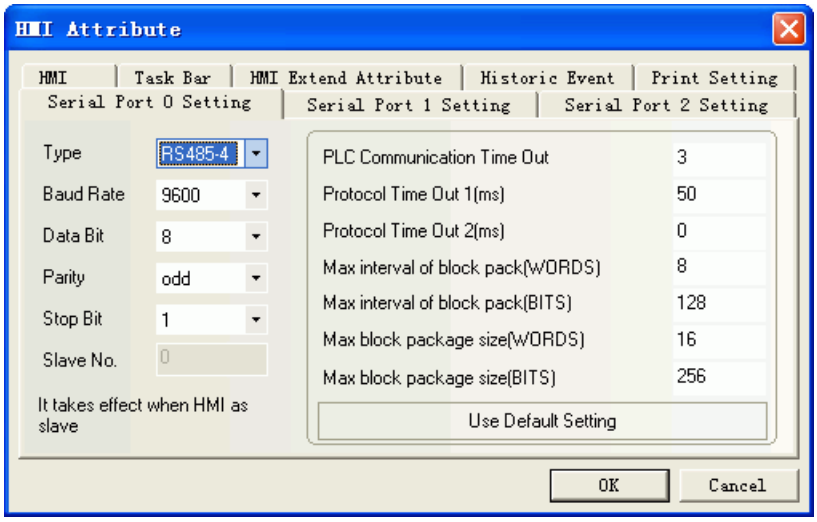
1. Only FP0 (C10CRM/C10CRS/C14CRM/C14CRS/C16T/C16CP/C32CT/C32CP) has RS232C port.
2. Only FP1 (C24/C40/C56/C72) has RS232C port.
3. Only FP1(C20R/C20T/C32T)has RS232C port.
4. AFP245 is the communication Package of FP2/FP2SH. AFP2803, AFP2084 and AFP2085 are the communications module of AFP2465.

# Communication Setting

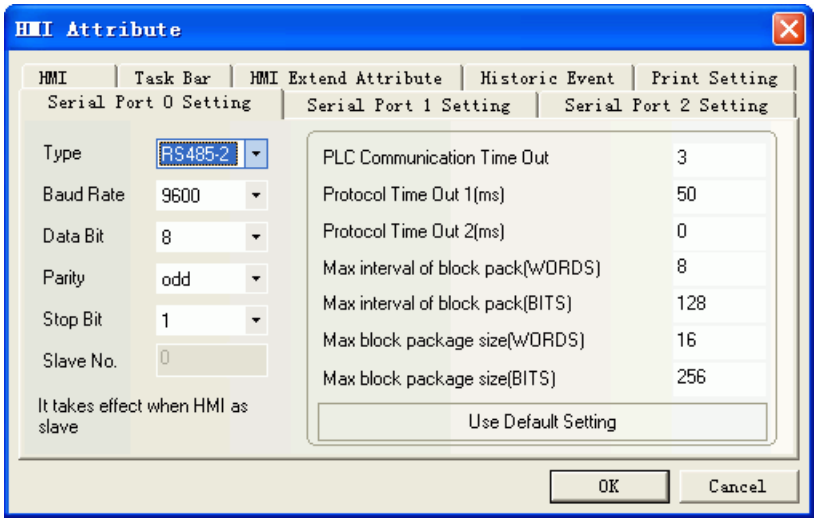
## RS232 communication




## RS485 communication




### RS422 communication




## Supported Device

### FP0-C16

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Input(X) Relay | Y0.0-12.F | ------ | DD.H | |
| Output(Y) Relay | X0.0-12.F | ------ | DD.H | |
| Timer(T) Relay | T0-99 | ------ | DD | |
| Counter(C) Relay | C100-143 | ------ | DDD | |
| Internal Relay(R) | R0.0-62.F<br>R900.0-903.F | ------ | DD.H<br>DDD.H | |
| Timer/Counter set value(SV) | ------ | SV0-143 | DDD | |
| Timer/Counter elapse value(EV) | ------ | EV0-143 | DDD | |
| Data Register(DT) | ------ | DT0-1659 | DDDD | |

### FPX

| Device | Bit Address | Word Address | Format |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Input(X) Relay | X0.0~109.F | ------ | DDD.H |
| Output(Y) Relay | Y0.0~109.F | ------ | DDD.H |
| Timer(T) Relay | T0~1007 | ------ | DDDD |
| Counter(C) Relay | C1008~1023 | ------ | DDDD |
| Link Relay(L) | L0.0~127.F | ------ | DDD.H |
| Internal Relay(R) | R0.0~255.F<br>R900.0~911.F | ------ | DDD.H |
| Timer/Counter set value(SV) | ------ | EV0~1023 | DDDD |
| Timer/Counter elapse value(EV) | ------ | SV0~1023 | DDDD |
| Data Register(DT) | ------ | DT0~32764 | DDDDD |

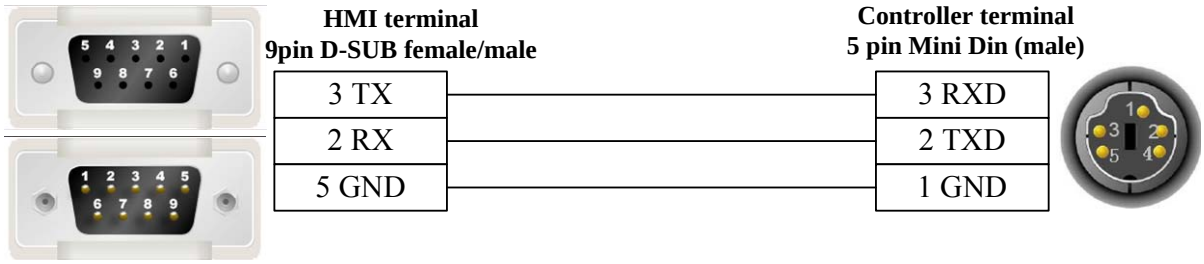
**Note：**

1). Example: X address: 01 in the PLC corresponds to 0.1 in the Kinco HMIware; X address: 1F in the PLC corresponds to 1.F in the Kinco HMIware.Y\R register address, and so on.

2). EV registers in the range of addresses on the touch screen can be set to 32767, but only supports the 9999 agreement.

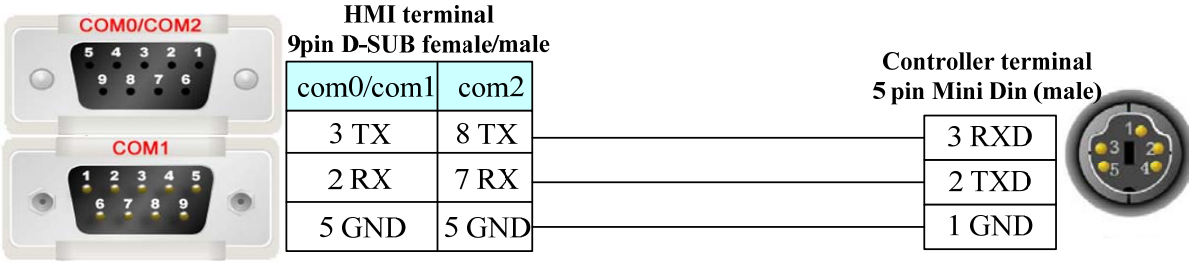
# Cable Diagram

## FP RS232 communication

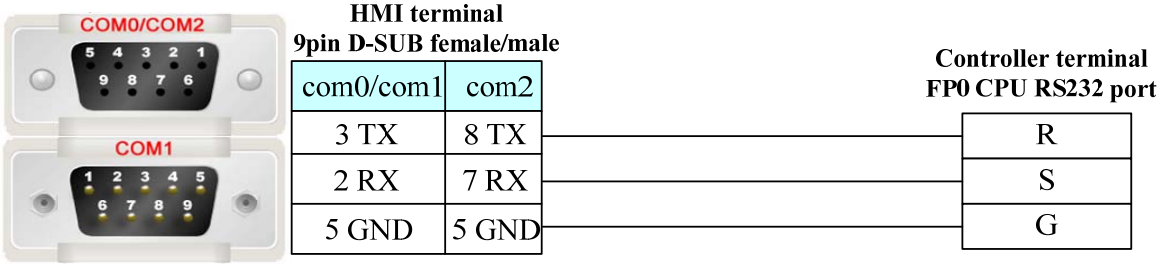



## RS232 communication

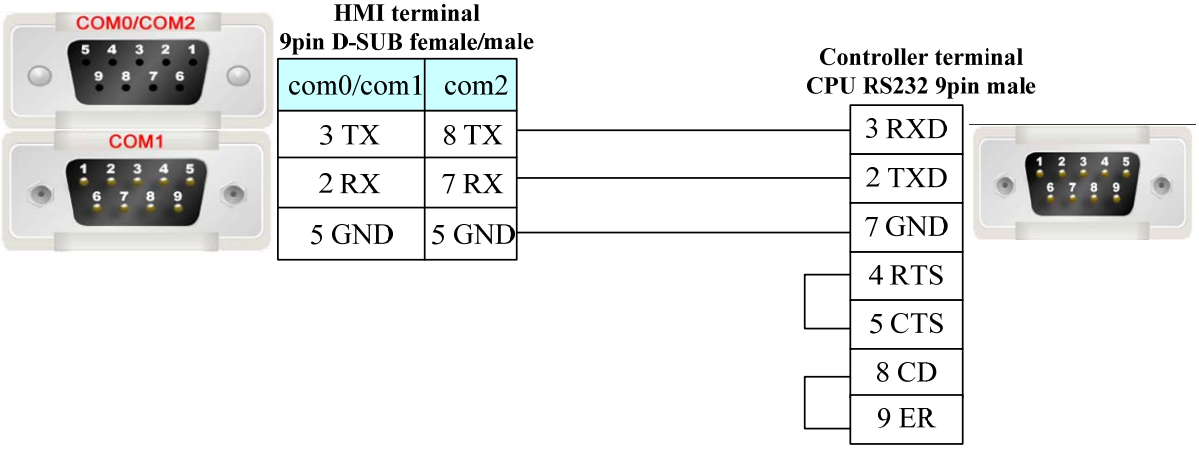
**Tool port:**



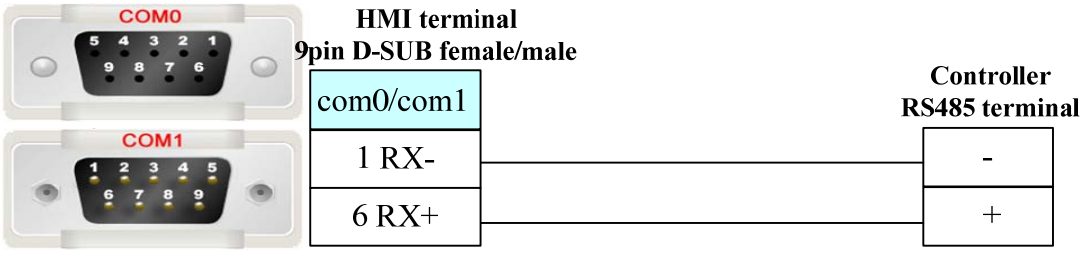

**CPU port:**



**Module port:**

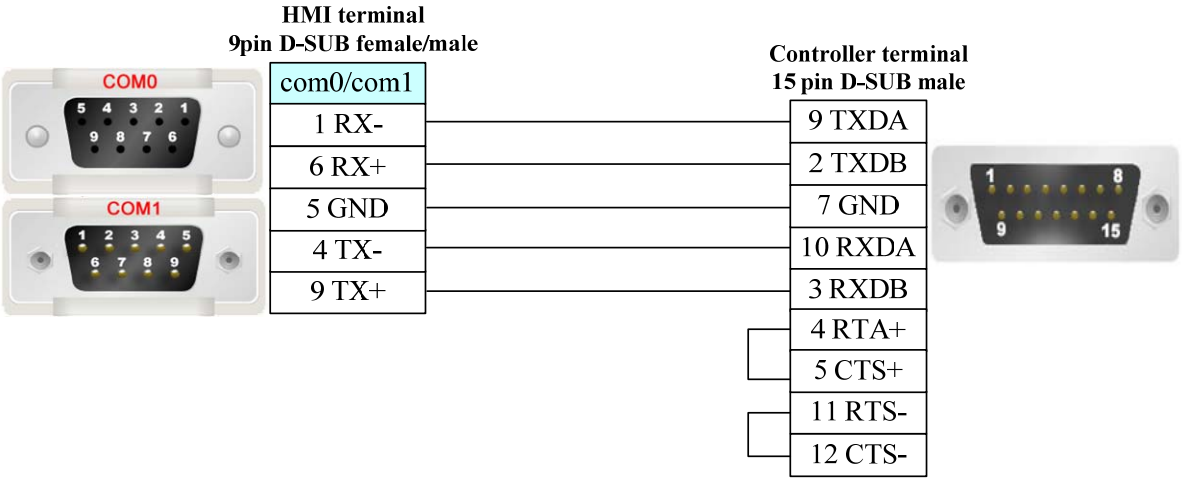



## RS485 communication

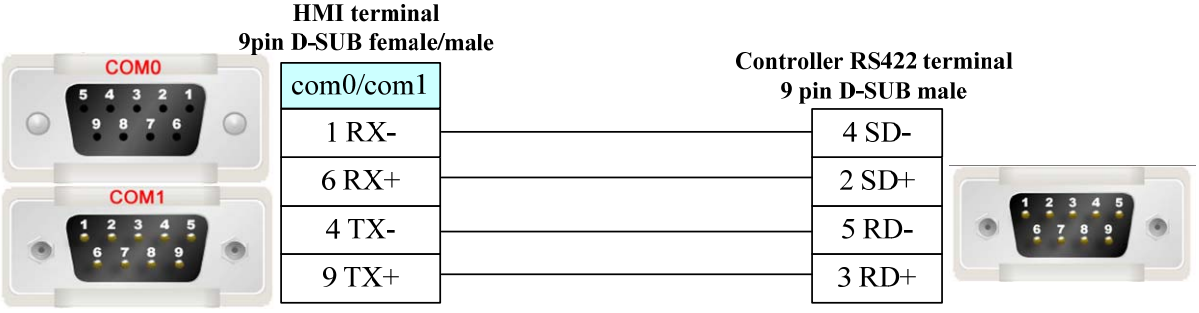



## RS422 communication

**FP3 RS422 programming port:**




**Another module RS422 communication:**



## 6.43 Memory map

### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| BMS005A-MC11 | BMS005A-MC11 | RS422 on the CPU unit | MemoryMap(Master-Slave) |

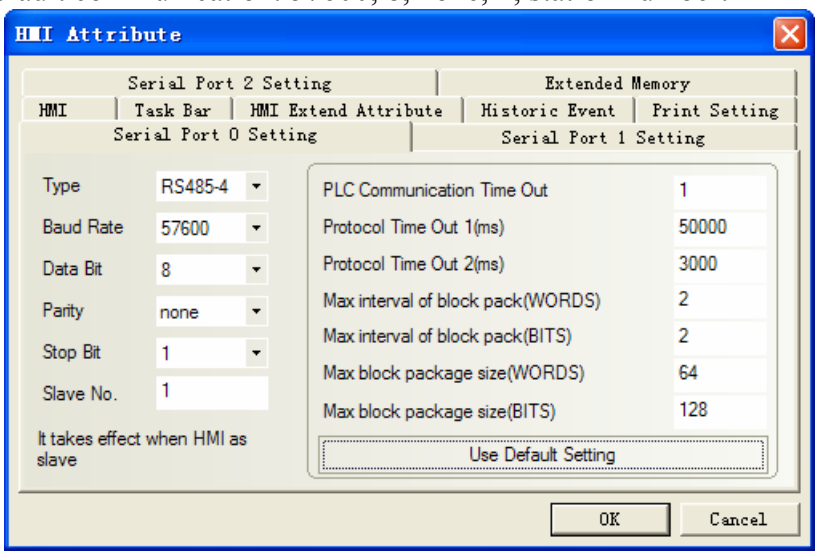
### System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| BMS005A-MC11 | BMS005A-MC11 | RS422 on the CPU unit | RS422 | Setting | Your owner cable |

### Communication Setting

#### HMI

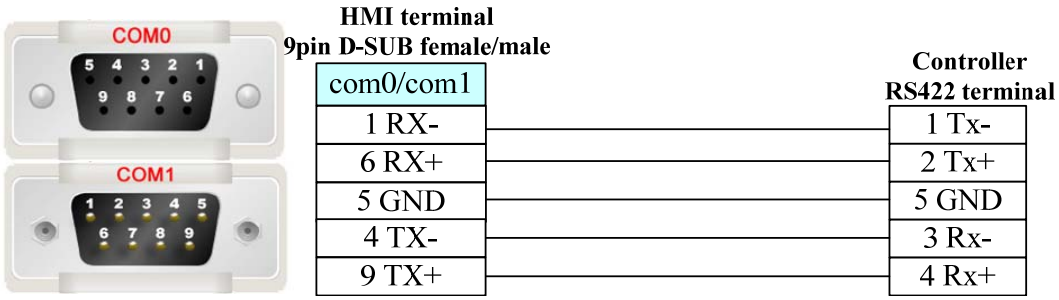
BMS005A default communication: 57600, 8, none, 1; station number: 1




### Supported Device

| Device | Bit Address | Word Address | Format |
|---|---|---|---|
| | LW.B 8000.0-8999.15 | -------- | DDDD.DD |
| | ——— | LW8000-8999 | DDDD |

### Cable Diagram




## 6.44 Millenium3

### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| Millenium 3 | Millenium 3 | RS232 on the CPU unit | Millenium 3 |
| | | RS485 on the CPU unit | |

### System configuration

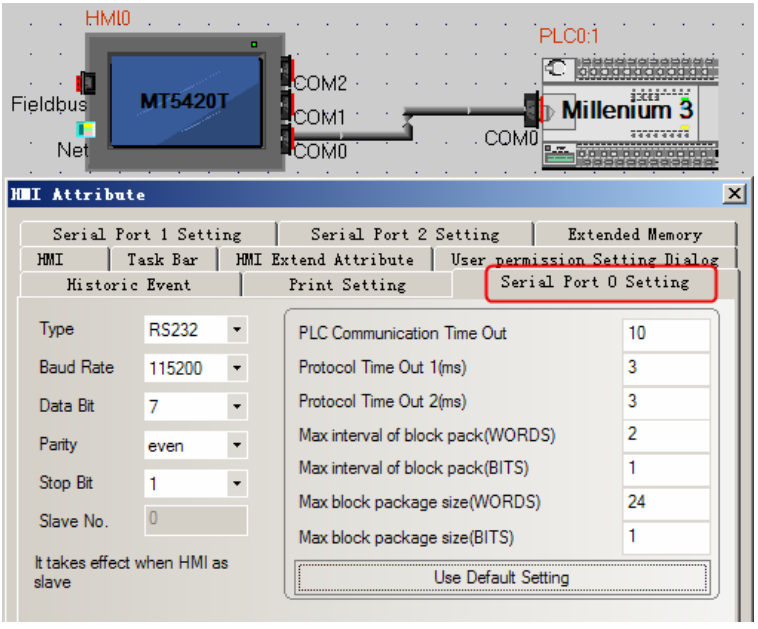
| Series | CPU | Link Module | COM Type | Parameter | Cable |
|---|---|---|---|---|---|
| Millenium 3 | Millenium 3 | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 on the CPU unit | RS485-2 | Setting | Your owner cable |

### Communication Setting

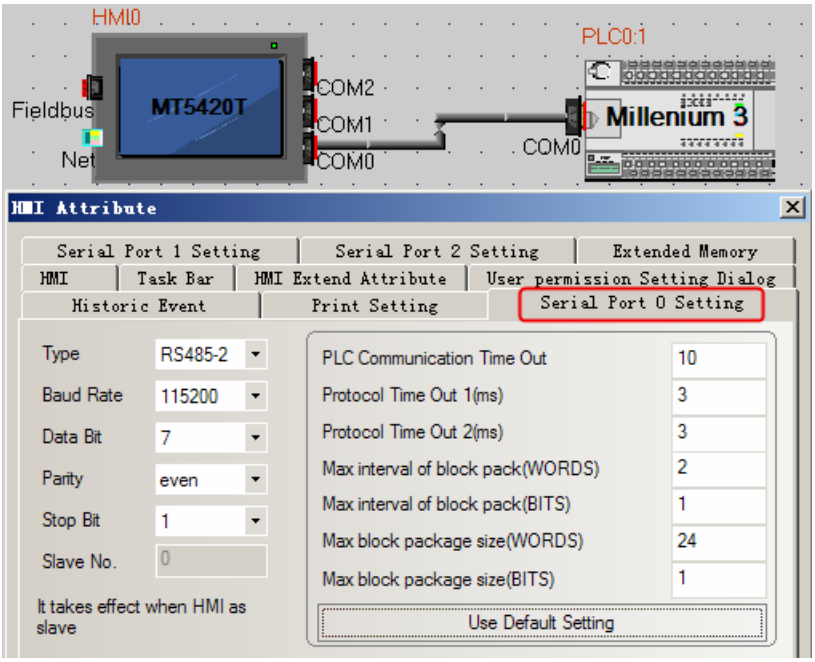
#### HMI

Default communication parameters 115200, 7, 1, even；Station NO.：1

**RS232:**



**RS485：**




## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Register | ------ | Register 0~23 | DD | Write only |
| Register | ------ | Register 24~47 | DD | Read only |

## Cable Diagram

### RS232

HMI terminal
9pin D-SUB female/male

| com1 |
|---|
| 2 RX |
| 3 TX |
| 8 |
| 5 GND |

**Controller terminal**
9pin D-SUB

| |
|---|
| 2 TXD |
| 3 RXD |
| 4 GND |
| 5 GND |

### RS485-2

HMI terminal
9pin D-SUB female/male

| com0/com1 |
|---|
| 1RX- |
| 6RX+ |

**Controller** terminal

| |
|---|
| - |
| + |

## 6.45 Mitsubishi Electric Corporation

### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| FXCPU | Fx0n | RS232 on the CPU unit | Mitsubishi FX0N/1N/2N |
| | | RS485 on the CPU unit | |
| | | RS485 Module | Mitsubishi FX0N/1N/2N<br>Mitsubishi FX-485ADP/422BD (Multi-station) *1 |
| | Fx1n | RS232 on the CPU unit | Mitsubishi FX0N/1N/2N |
| | | RS485 on the CPU unit | |
| | | RS485 Module | Mitsubishi FX0N/1N/2N<br>Mitsubishi FX-485ADP/422BD (Multi-station)*1 |
| | Fx1s | RS232 on the CPU unit | Mitsubishi FX1s |
| | | RS485 on the CPU unit | |
| | | RS485 Module | Mitsubishi FX1s<br>Mitsubishi FX-485ADP/422BD (Multi-station) |
| | Fx2n | RS232 on the CPU unit | Mitsubishi FX0N/1N/2N |
| | | RS485 on the CPU unit | |
| | | RS485 Module | Mitsubishi FX0N/1N/2N<br>Mitsubishi FX-485ADP/422BD (Multi-station) *1 |
| | Fx2N-10GM<br>Fx2N-20GM | RS232 on the CPU unit | Mitsubishi FX2N_10GM/20GM |
| | | RS485 on the CPU unit | |
| | Fx3u | RS232 on the CPU unit | Mitsubishi FX3u |
| | | RS485 on the CPU unit | |
| | | FX3U-485-BD | Mitsubishi FX3u<br>Mitsubishi FX-485ADP/422BD (Multi-station) *1 |
| | Fx3G-60M | RS485 on the CPU unit | Mitsubishi FX0N/1N/2N |
| QCPU | Q00jCPU | RS232 on the CPU unit | Mitsubishi Q00J (CPU Port) |
| | | QJ71C24<br>QJ71C24-R2<br>QJ71C24N<br>QJ71C24N-R2<br>QJ71C24N-R4 | Mitsubishi Q_QnA (Link Port) |
| | Q00CPU<br>Q01CPU | RS232 on the CPU unit | Mitsubishi Q_QnA (Link Port) |
| | | QJ71C24<br>QJ71C24-R2<br>QJ71C24N<br>QJ71C24N-R2<br>QJ71C24N-R4 | |
| | Q02CPU | RS232 on the CPU unit | Mitsubishi Q series (CPU Port) |

| | | | |
|---|---|---|---|
| | Q02HCPU<br>Q12HCPU<br>Q25HCPU | QJ71C24<br>QJ71C24-R2<br>QJ71C24N<br>QJ71C24N-R2<br>QJ71C24N-R4 | Mitsubishi Q_QnA (Link Port) |
| | Q06HCPU | RS232 on the CPU unit | Mitsubishi Q06H |

**Note:** 1. Don't hot plug!

2. *[1] support multi station

## Network Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| QCPU | Q00CPU<br>Q00JCPU<br>Q01CPU<br>Q02CPU<br>Q02HCPU<br>Q06HCPU<br>Q12HCPU<br>Q25HCPU<br>Q03UDECPU<br>Q04UDEHCPU<br>Q06UDEHCPU<br>Q13UDEHCPU<br>Q26UDEHCPU | QJ71E71<br>QJ71E71-B2<br>QJ71E71-B5<br>QJ71E71-100 | Mitsubishi QJ71E71 EtherNet Slave |
| | Q02UCPU<br>Q03UDCPU<br>Q04UDHCPU<br>Q06UDHCPU<br>Q13UDHCPU<br>Q26UDHCPU | QJ71E71<br>QJ71E71-B2<br>QJ71E71-B5<br>QJ71E71-100 | |

## Serial System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| Melsec FX | Fx0n | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 Module | RS485-4 | Setting | Your owner cable |
| | Fx1n | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 Module | RS485-4 | Setting | Your owner cable |
| | Fx1s | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 on the CPU unit | RS485-4 | Setting | Your owner cable |
| | | RS485 Module | RS485-4 | Setting | Your owner cable |
| | Fx2n | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 on the CPU unit | RS485-4 | Setting | Your owner cable |

| | | | | | |
|---|---|---|---|---|---|
| | | RS485 Module | RS485-4 | Setting | Your owner cable |
| | Fx2N-10GM<br>Fx2N-20GM | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 on the CPU unit | RS485-4 | Setting | Your owner cable |
| | Fx3uc | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 on the CPU unit | RS485-4 | Setting | Your owner cable |
| | | RS485 Module | RS485-4 | Setting | Your owner cable |
| Melsec Q | Q00jCPU | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | QJ71C24<br>QJ71C24-R2<br>QJ71C24N<br>QJ71C24N-R2<br>QJ71C24N-R4 | RS485-4 | Setting | Your owner cable |
| | Q00CPU<br>Q01CPU | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | QJ71C24<br>QJ71C24-R2<br>QJ71C24N<br>QJ71C24N-R2<br>QJ71C24N-R4 | RS485-4 | Setting | Your owner cable |
| | Q02CPU<br>Q02HCPU<br>Q06HCPU<br>Q12HCPU<br>Q25HCPU | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | QJ71C24<br>QJ71C24-R2<br>QJ71C24N<br>QJ71C24N-R2<br>QJ71C24N-R4 | RS485-4 | Setting | Your owner cable |
| | Q06HCPU | RS232 on the CPU unit | RS232 | Setting | Your owner cable |

## Network System configuration

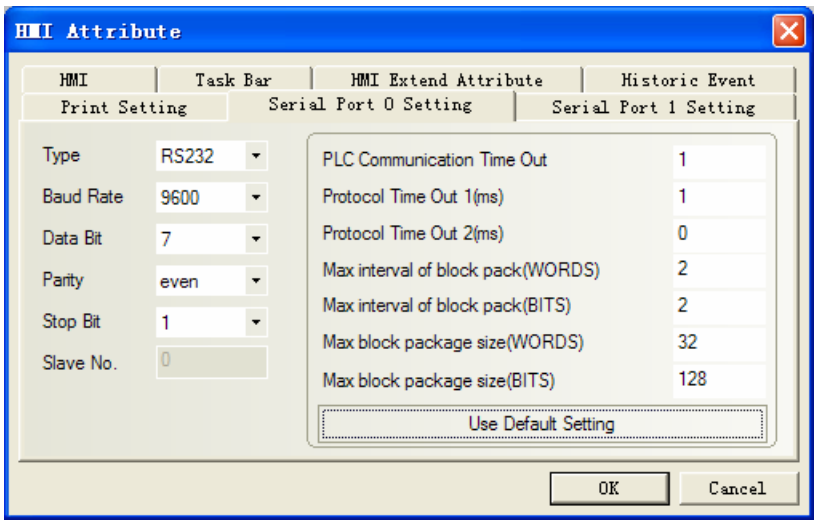
| Series | CPU | Link Module | Connect Type | Parameter | Cable |
|---|---|---|---|---|---|
| Melsec Q | Q00CPU<br>Q00JCPU<br>Q01CPU<br>Q02CPU<br>Q02HCPU<br>Q06HCPU<br>Q12HCPU<br>Q25HCPU<br>Q03UDECPU<br>Q04UDEHCPU<br>Q06UDEHCPU<br>Q13UDEHCPU<br>Q26UDEHCPU | QJ71E71<br>QJ71E71-B2<br>QJ71E71-B5<br>QJ71E71-100 | Ethernet | Setting | Your owner cable |
| | Q02UCPU<br>Q03UDCPU | QJ71E71<br>QJ71E71-B2 | Ethernet | Setting | Your owner cable |

| | | | | | |
|---|---|---|---|---|---|
| | Q04UDHCPU<br>Q06UDHCPU<br>Q13UDHCPU<br>Q26UDHCPU | QJ71E71-B5<br>QJ71E71-100 | | | |

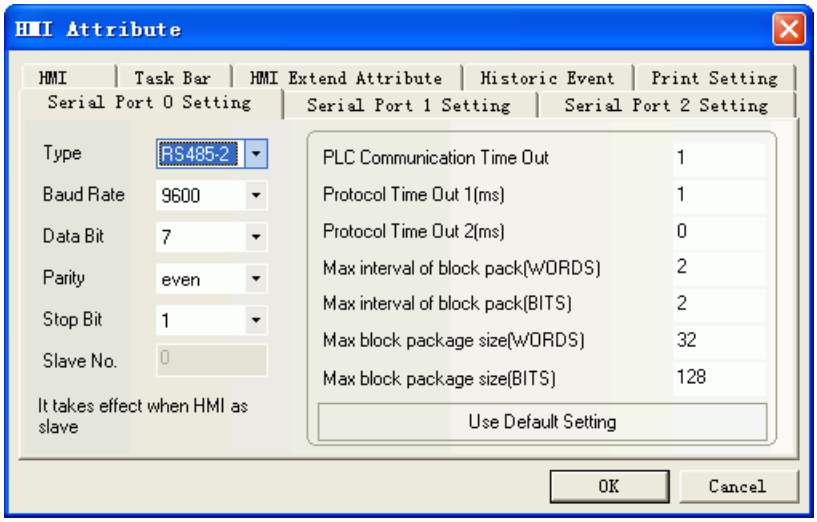
## Serial Communication Setting

**FX 1s protocol default communication:** 9600, 7, even, 1; station: 0

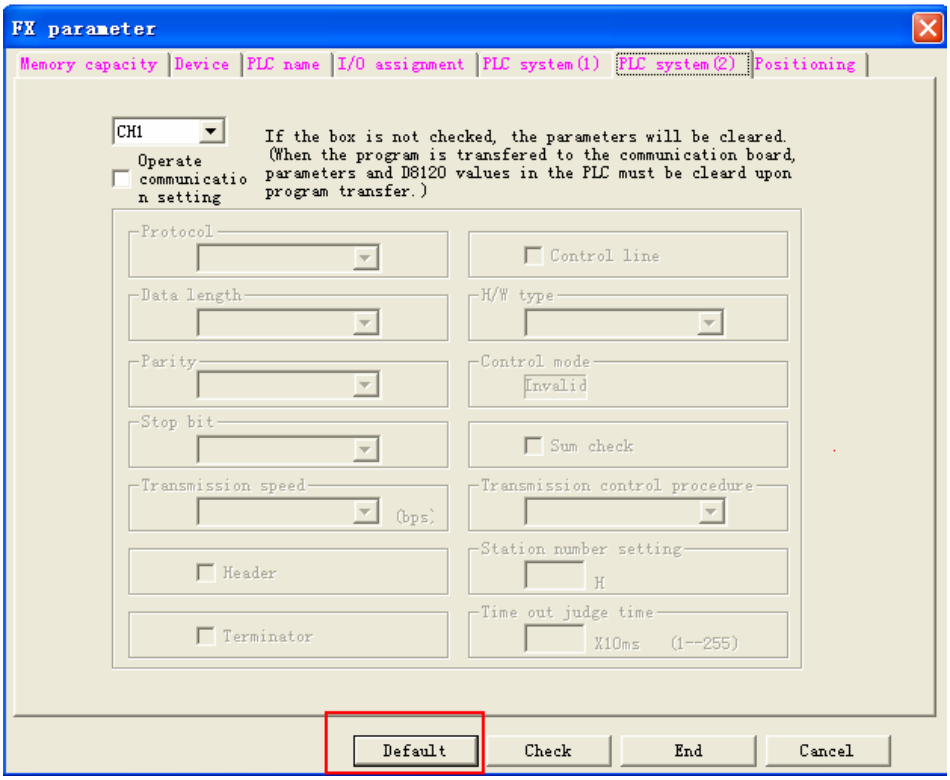
RS232 communication




RS422 communication

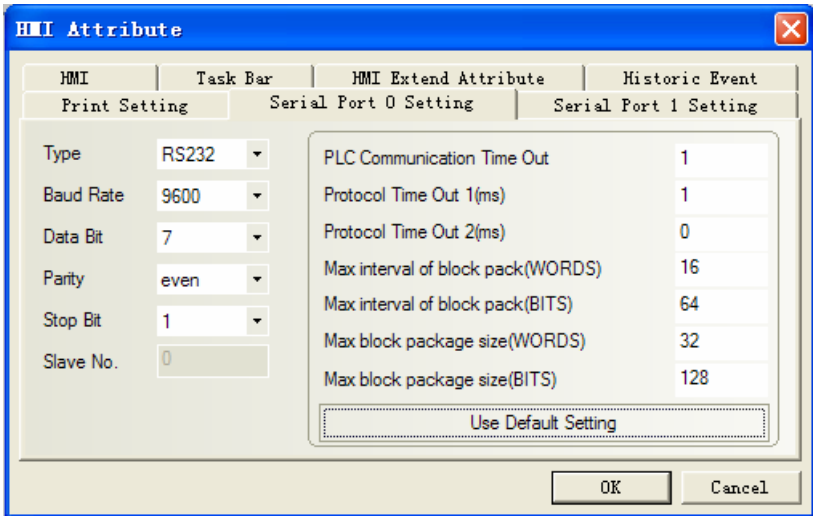



**Select default parameter for plc**

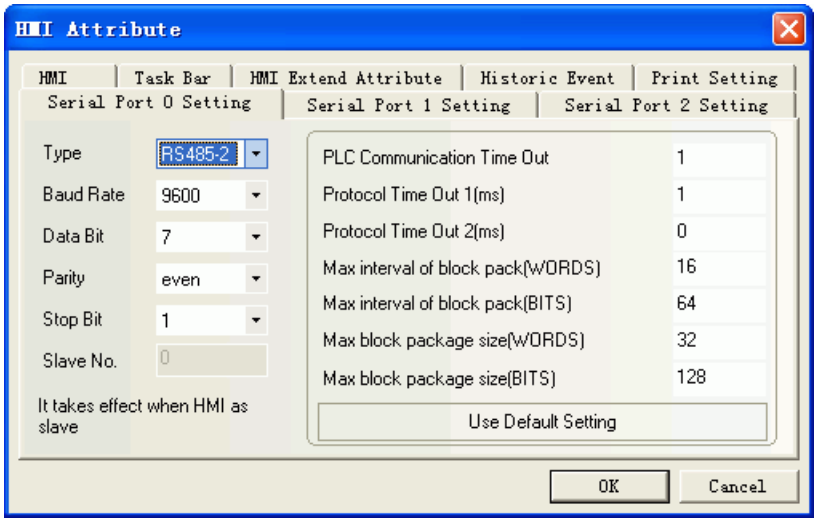



**FX 2n default communication:** 9600, 7, even, 1; station: 0

RS232 communication

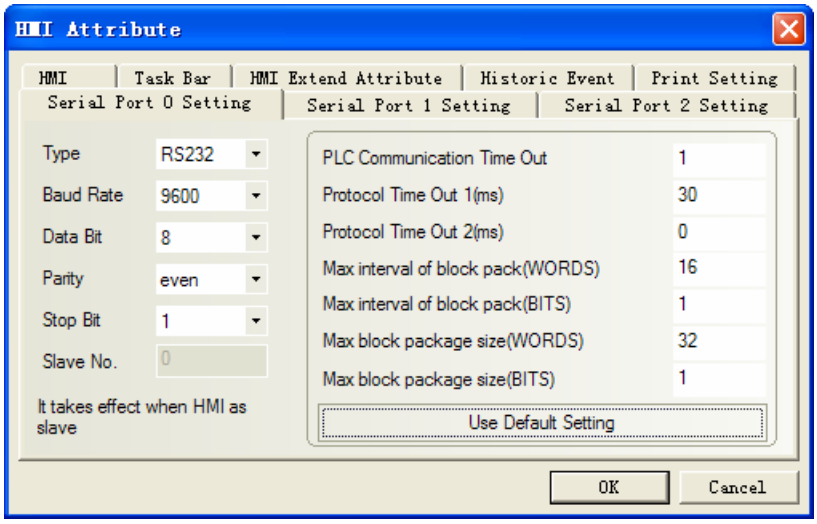



RS422 communication

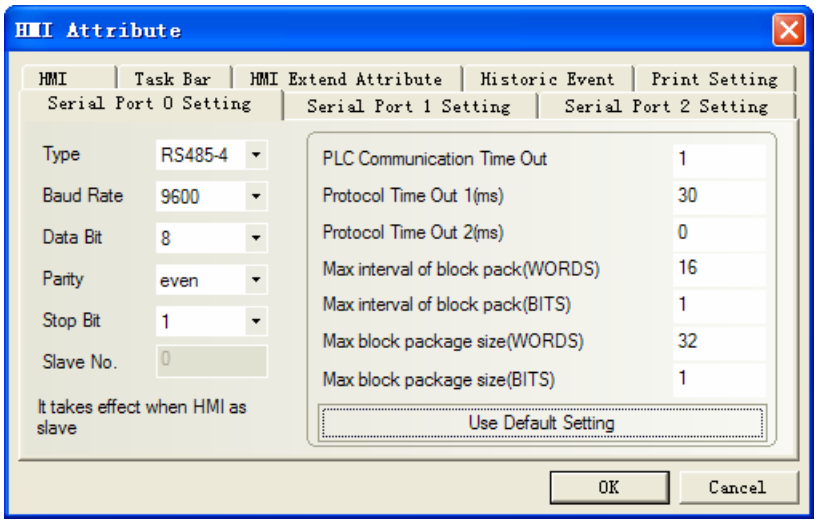



**Fx2N-10G/20GM default communication:** 9600, 8, even, 1; station: 0

RS232 communication

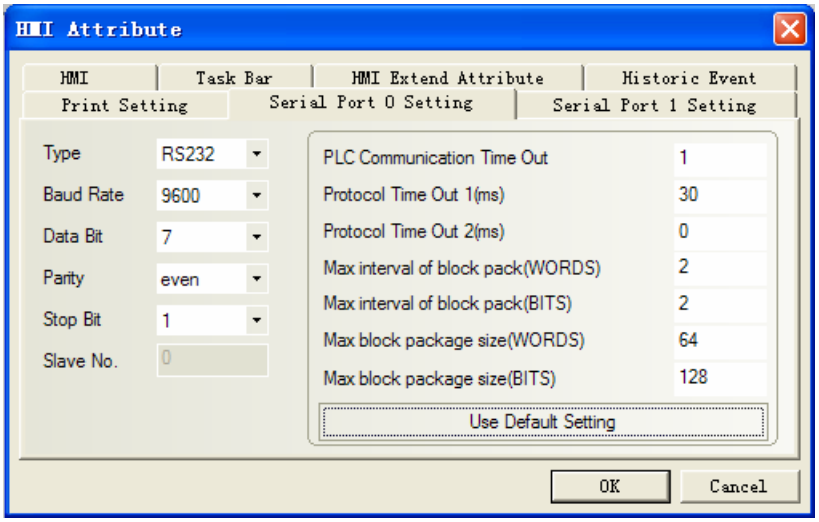



RS422 communication

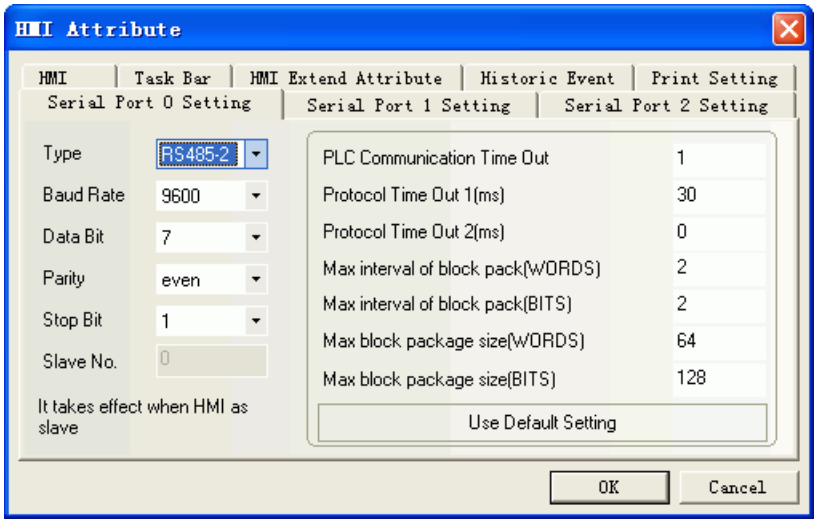


**FX 3u default communication:** 9600, 7, even, 1; station: 0

RS232 communication

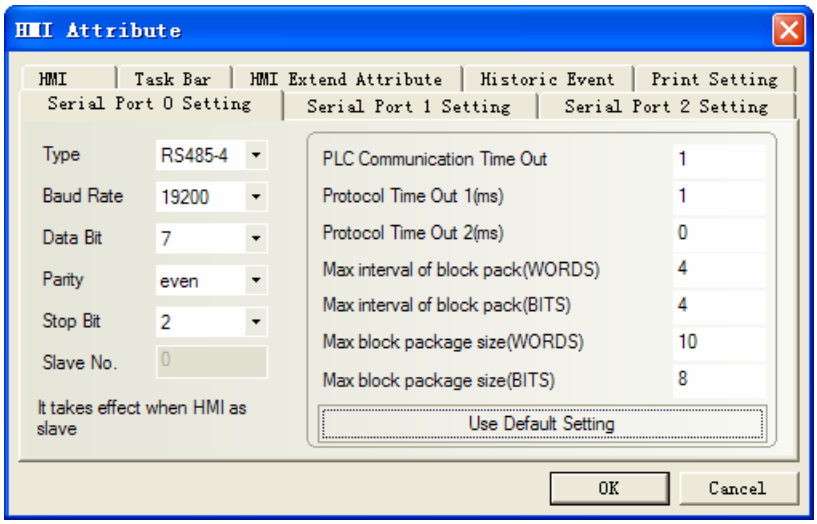



RS422 communication

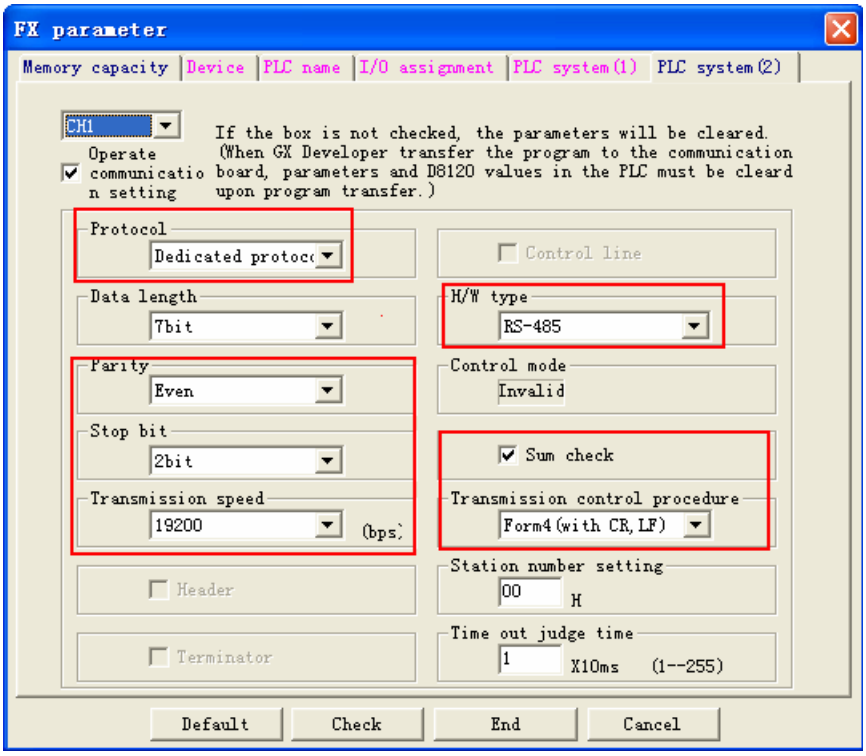



**Mitsubishi FX-485ADP/422BD (Multi-station) default communication: 19200, 7, even,** 2; station: 0

(support multi station)




## PLC Software Setting:




Note：Must modify the value of special data register.

Set D8120=OXEO9E;

D8121=0;

D8129=1;

Download and PLC restart.

## Q00j series RS232 communication

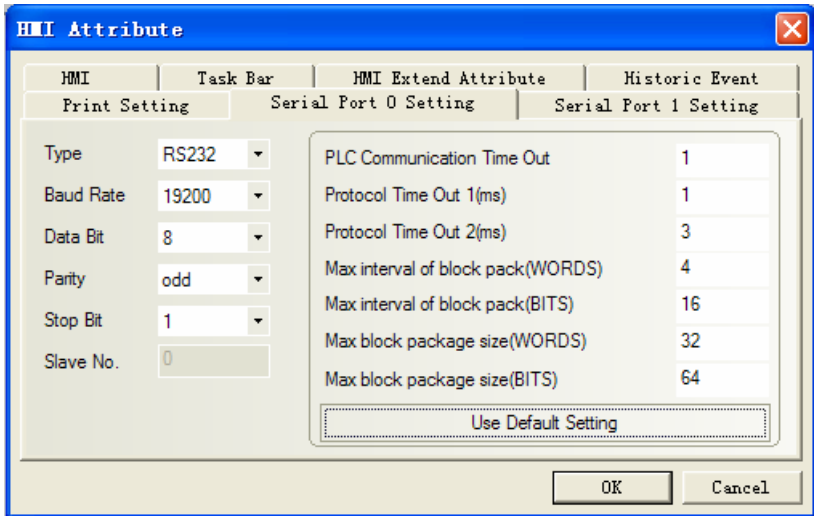
**Note：**

1、 HMI default parameter: 19200, 8, odd, 1.

2、 PLC station No.:0（Non-support station number, only one HMI connect to one PLC）.

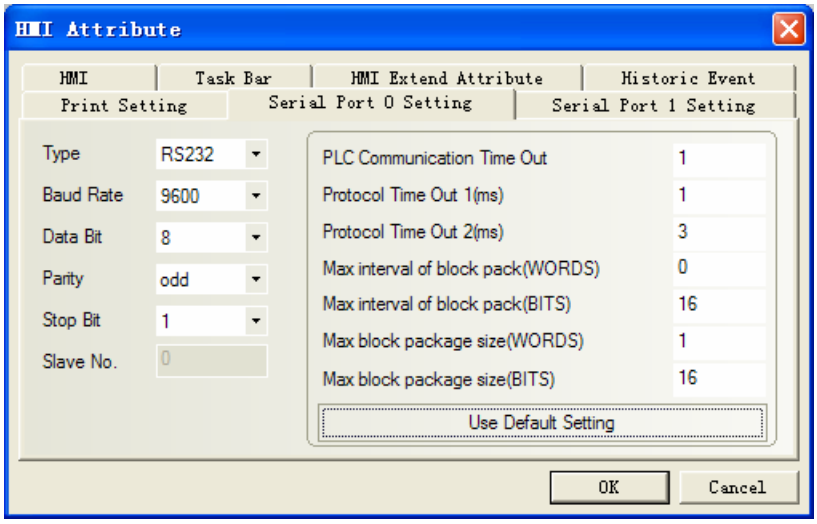
3、 If communication baudrate is error, HMI automatically set PLC baudrate for the HMI baudrate. It is not necessary to consider whether the PLC communications baudrate being true.

4、 This drives support password protection model Q00J.

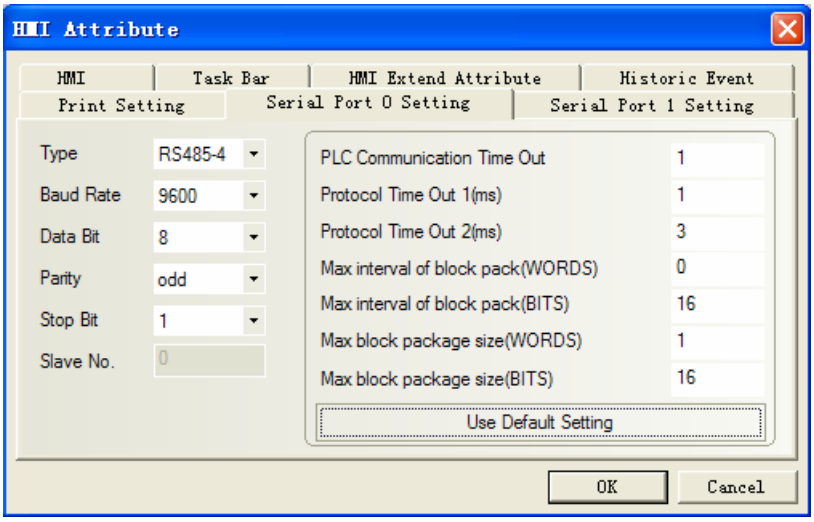



**Q00 series default communication:** 9600, 8, odd, 1; station: 0

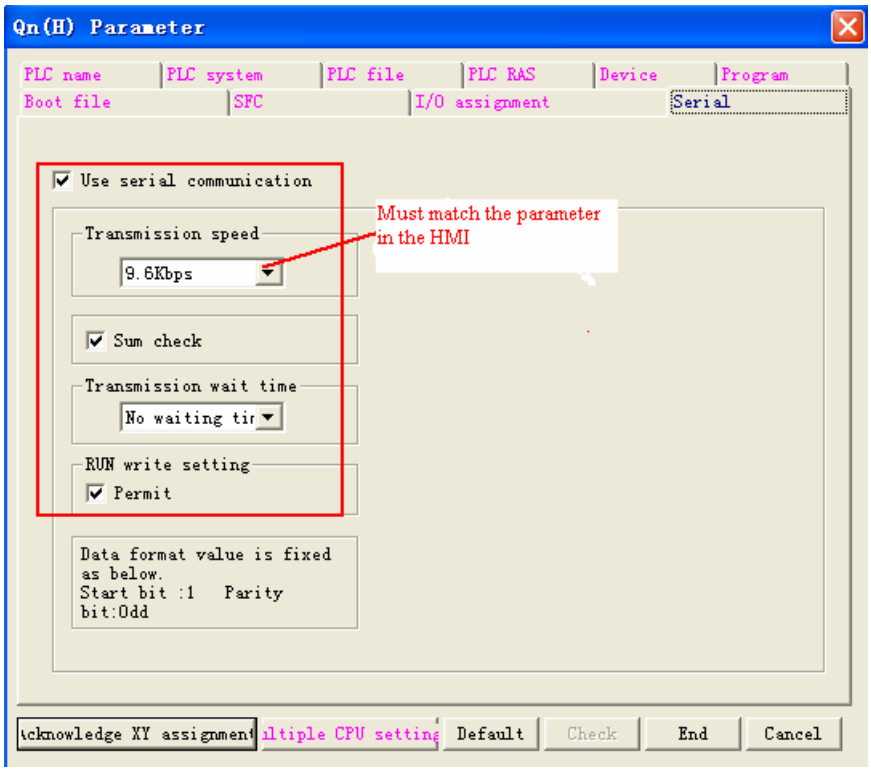
RS232 communication




RS485 communication



## Q00、Q01 PLC communication setting



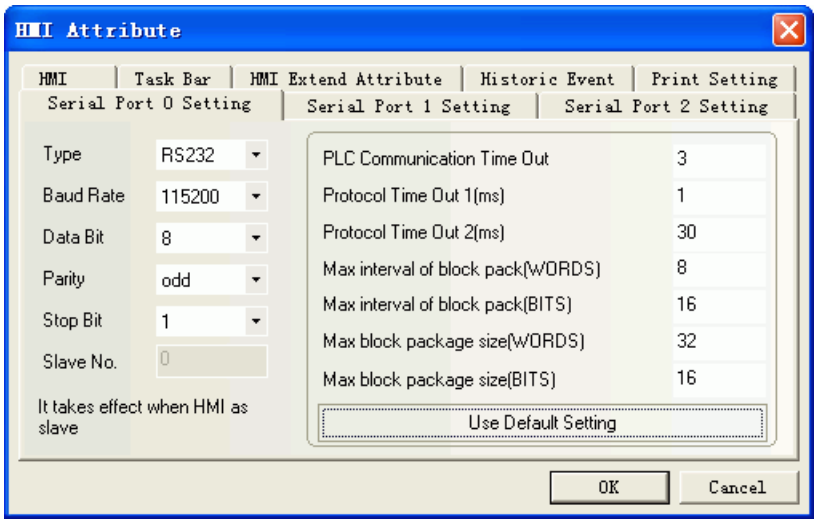

## Q02 series CPU port communication

1.HMI Default：115200，8，odd，1

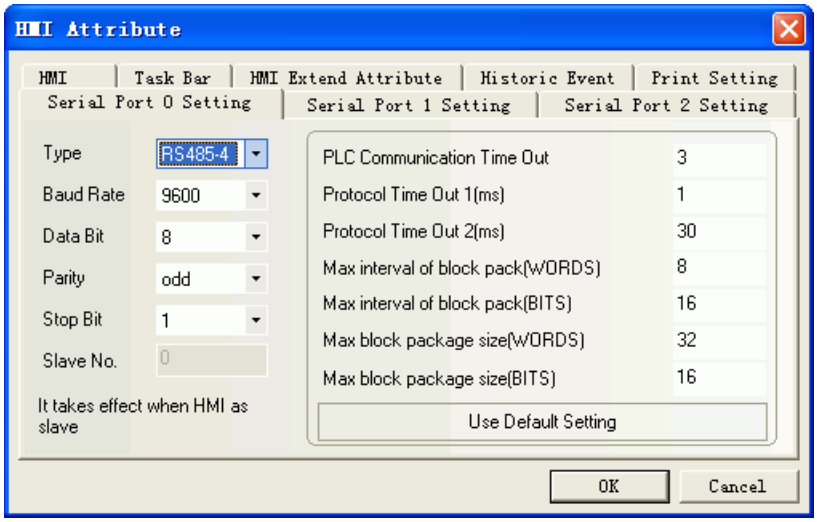
2. PLC Station No.：0（one HMI communicate with one PLC）

3.If baud rate is wrong，HMI will set the baud rate of PLC the same as HMI.

RS232 communication




RS422 communication (Choose Mitsubishi Q_QnA (Link Port))



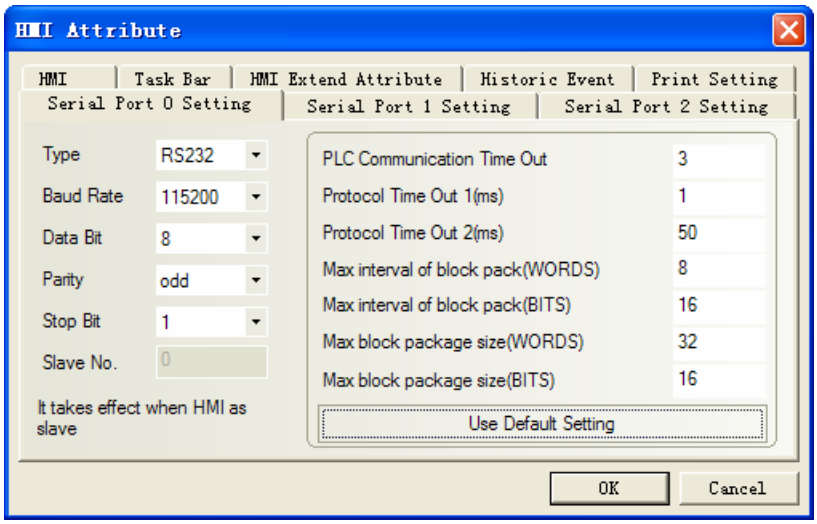

## Q06H series CPU port communication

1.HMI Default：115200，8，odd，1

2. PLC Station No.：0（one HMI communicate with one PLC）

3.If baud rate is wrong，HMI will set the baud rate of PLC the same as HMI.

RS232 communication




**QJ71C24 module communication:** choose Mitsubishi Q_QnA (Link Port) or Mitsubishi Melsec Q drive

**Differences:**

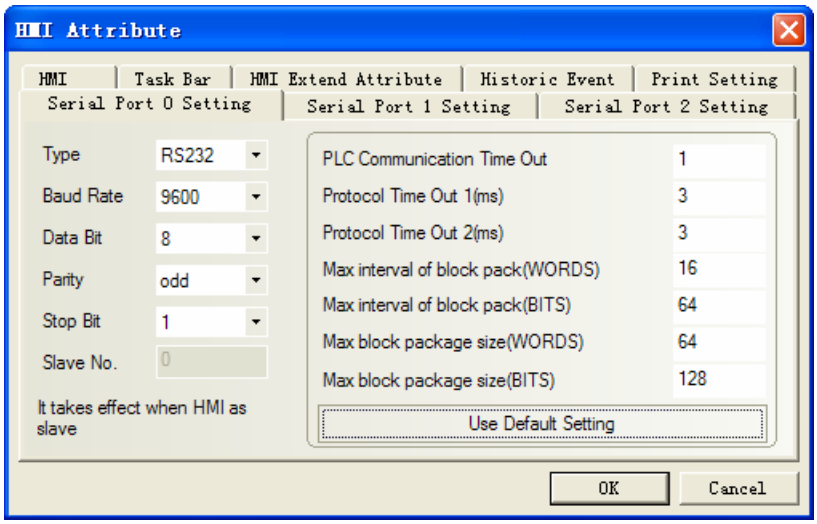
1. Mitsubishi Q_QnA (Link Port) protocol advantage is communication speed, disadvantages does not support module RS232 communications;

2. Mitsubishi Melsec Q protocol advantages is that it support RS232 and RS485 communication modules, disadvantage is that communication is slow.

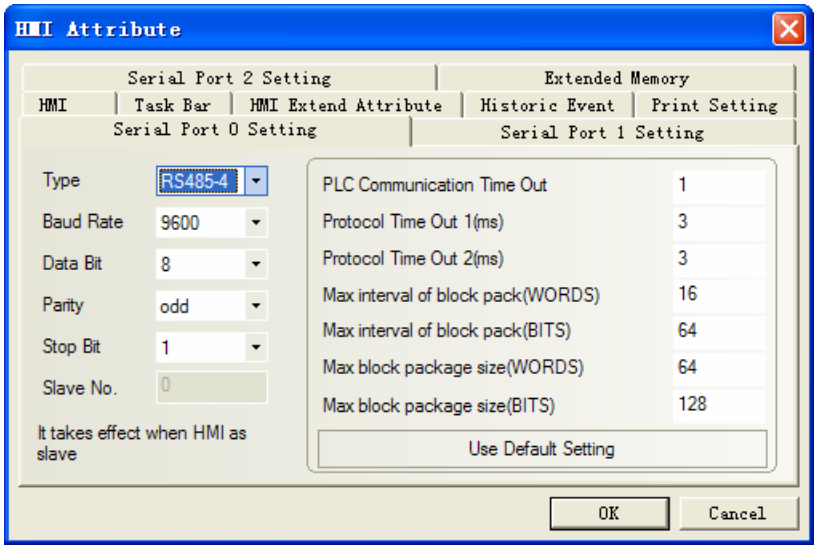
HMI setting

Module default parameters: 9600, 8, odd, 1; station:0

RS232



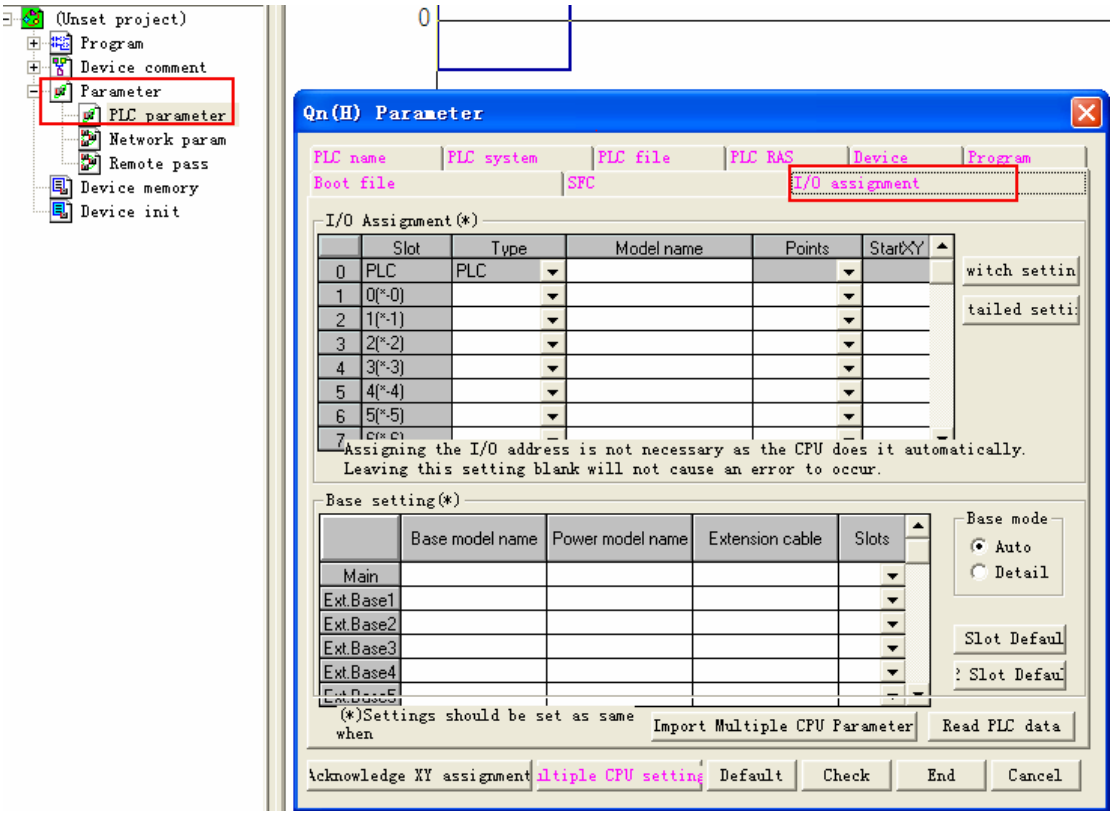

RS485



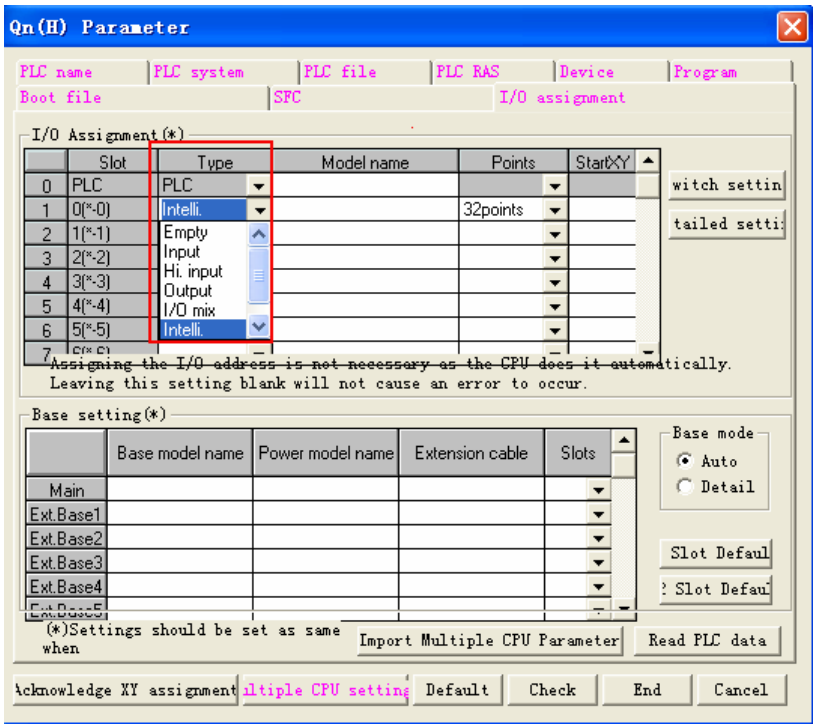

Modules can also modify the baud rate, parity, station number.

**PLC Software Setting:**

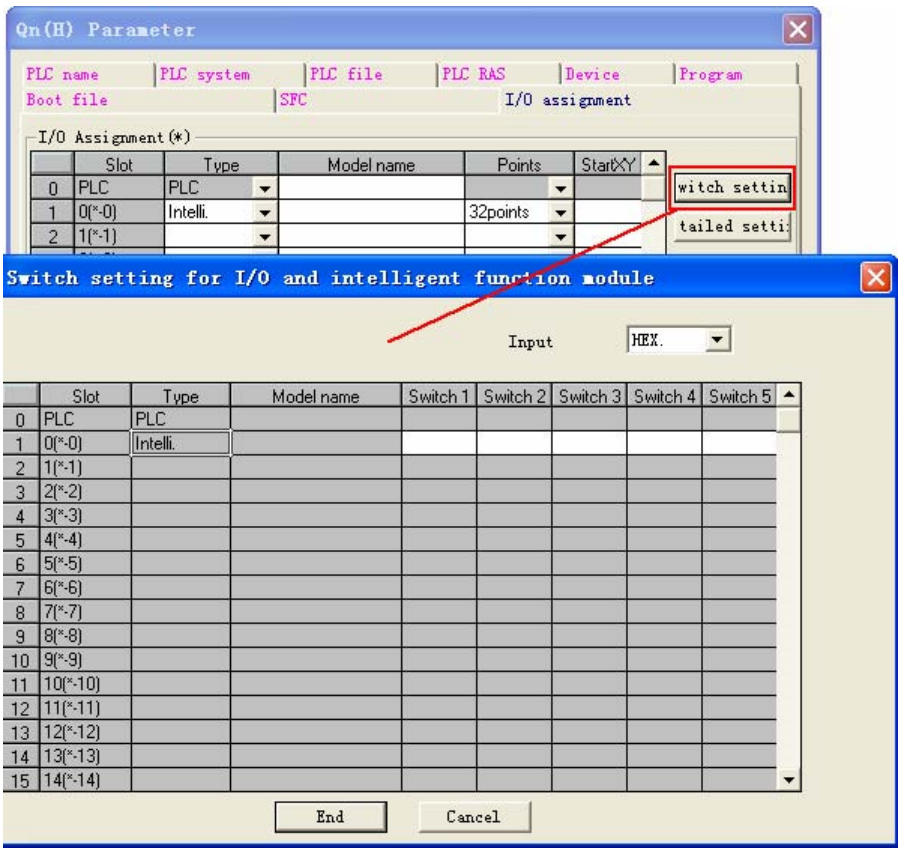
a. “parameter” double-click “plc parameter”, select “I/O assignment”.




b. click “type” to select “intelligent”




c. click “switch setting” and set




Setting the intelligent function unit switch

| switch | content | | example |
|---|---|---|---|
| Switch1 | CH1:transmission rate, transmission setting | | 0BEEH |
| Switch2 | CH1:communication protocol | MC protocol type5 binary | 0005H |
| Switch3 | CH2:transmission rate, transmission setting (the same as switch 1) | | 0BEEH |
| Switch4 | CH2:communication protocol | MC protocol type5 binary | 0005H |
| Switch5 | Station No. setting | 0~31 | 0000H |

Bit 15 ~ 8 7 ~ 0

Transmission rate | Transmission setting

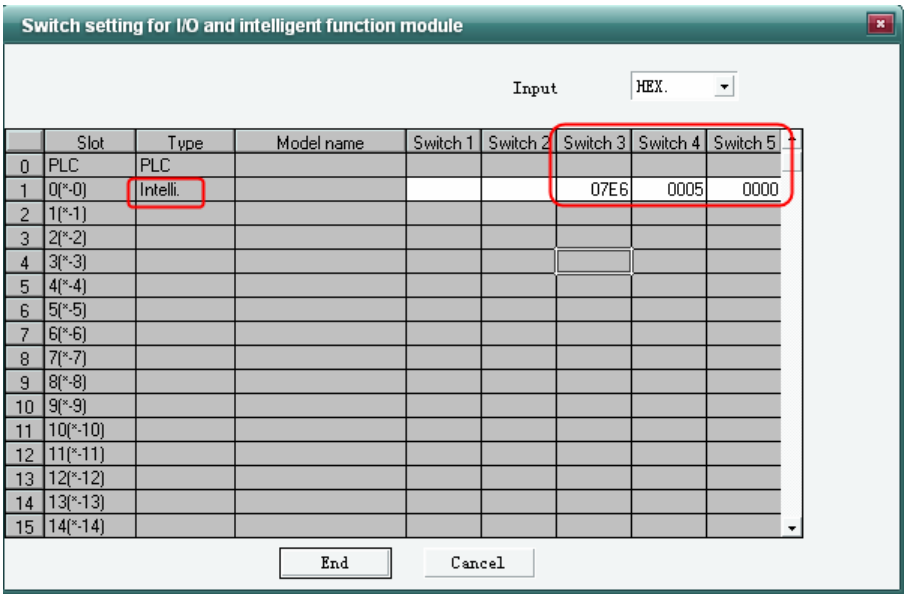
| bps | value |
|---|---|
| 4800 | 04H |
| 9600 | 05H |
| 19200 | 07H |
| 38400 | 09H |
| 57600 | 0AH |
| 1E+05 | 0BH |

| Bit | content | OFF | ON |
|---|---|---|---|
| 0 | Motion Setting | inching | cont |
| 1 | data bit | 7 | 8 |
| 2 | parity check bit | N | Y |
| 3 | parity check | odd | even |
| 4 | stop bit | 1 | 2 |
| 5 | sum check | N | Y |
| 6 | RUN read-in | forbid | allow |
| 7 | change | forbid | allow |

115Kbps
8 bit
1 bit
even

If the communcation parameters of CH2 485 is 19200/8/odd/1, station:0, set as follows “switch setting” in “PLC parameters” and “I/O assignment”.

| Setting Switch | Setting Value | Setup Description |
|---|---|---|
| Switch 3 | 07E6 | 19200/8/With/Odd/1 |
| Switch 4 | 0005 | Mode = Form 5 |
| Switch 5 | 0000 | Station No. = 0 |



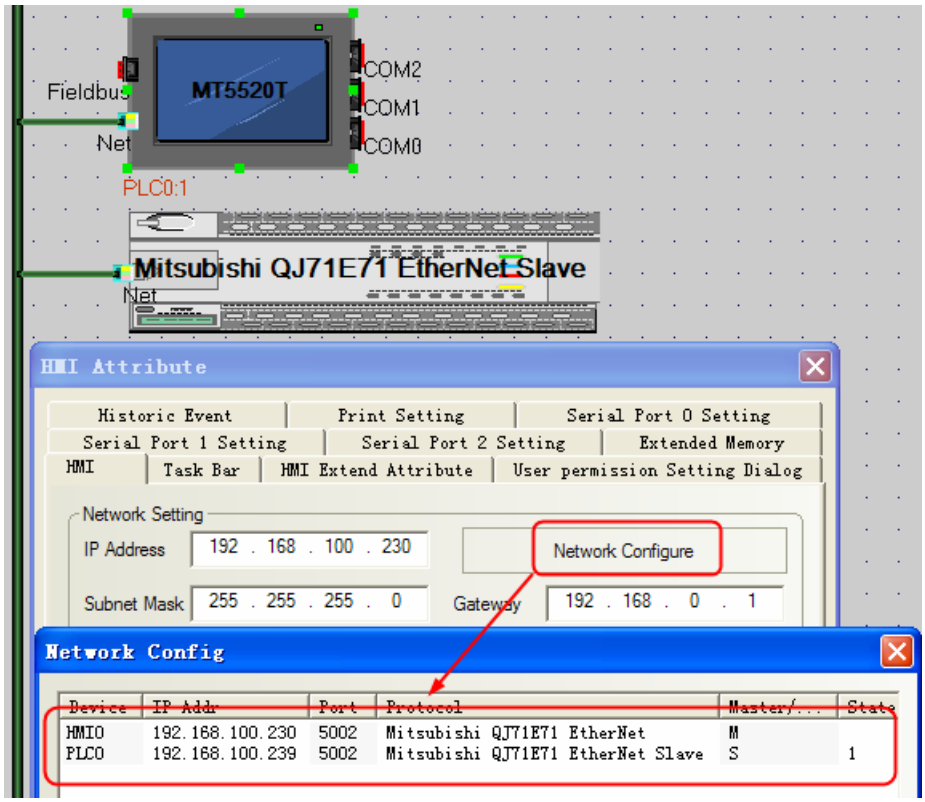

If the communcation parameters of CH1 232 is 19200/8/odd/1, station:0, set as follows “switch setting” in “PLC parameters” and “I/O assignment”.

| Setting Switch | Setting Value | Setup Description |
|---|---|---|
| Switch 1 | 07E6 | 19200/8/With/Odd/1 |
| Switch 2 | 0005 | Mode = Form 5 |
| Switch 5 | 0000 | Station No. = 0 |

**Note:** After setting the switches, reset the PLC or turn the power off and then back on again.

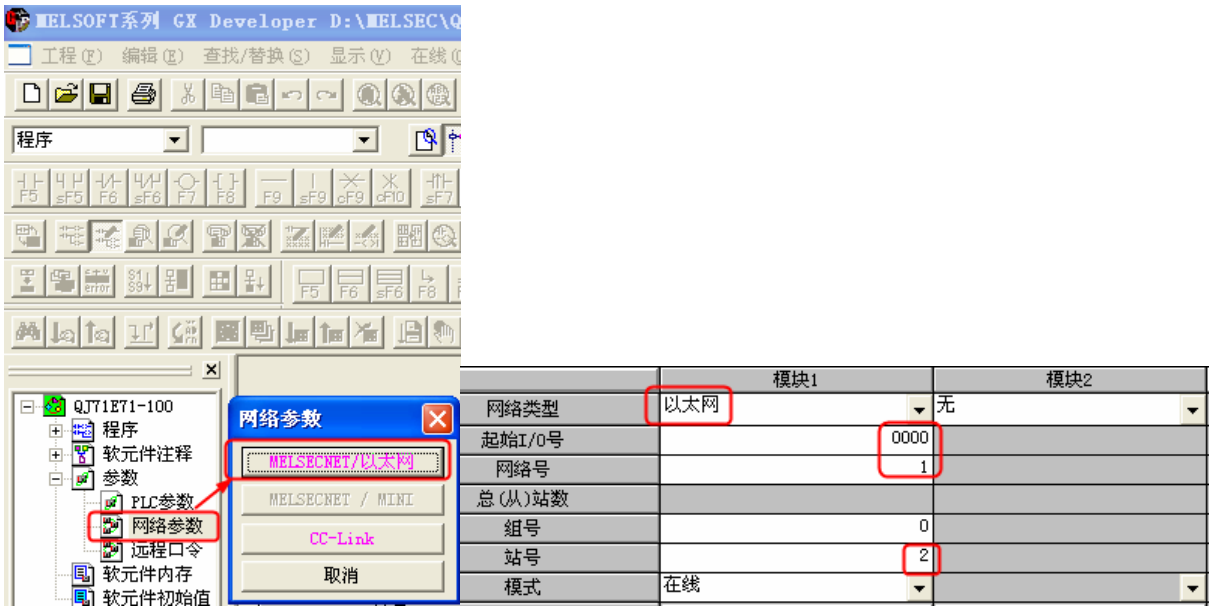
## Network Communication Setting

HMI




## PLC configuration

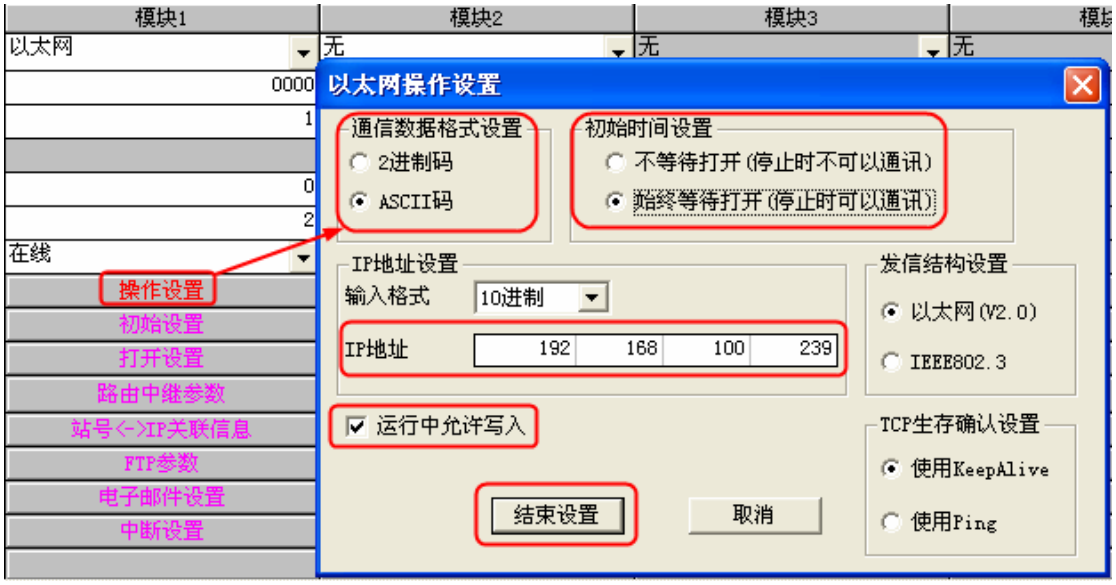
1. Ethernet parameters



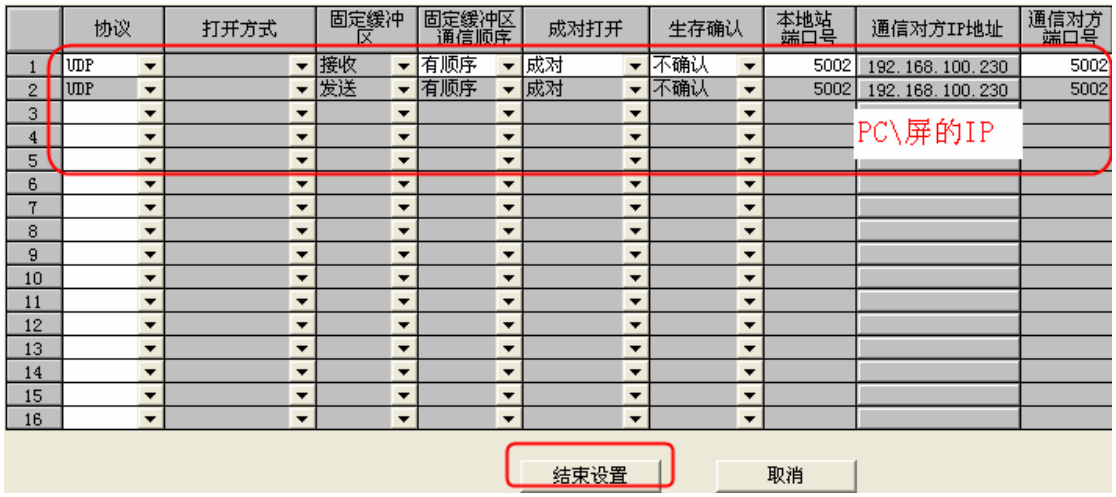

[network type] select "Ethernet"; [start I/O] is a hexadecimal number increments & H10, you can select "0"; [network number] range is 1-239, generally set at the network level, only a layer of the network, so set to "1"; [Group number] range is 0-32, select "0"; [station number] range 1-64, 1 occupied by the computer side, can be set to 2-64, the example is set to "2" ; [Model] Select "online". Next, click [operation], set the IP address of the dialog box pops up, in part by the network to determine the first three, the fourth part of the free use of the network number. One thing to note is that the figure of [the initial time setting] to choose "Always wait to open" (stop when communication), or Ethernet port is not open external device. Click [end

set] button to save the settings.

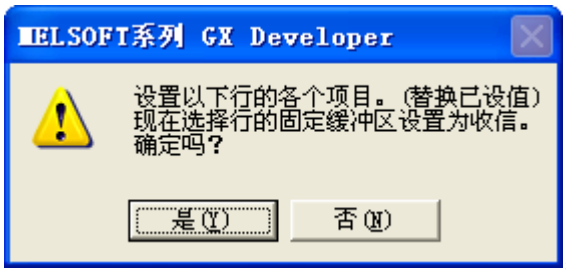
2. Operation set




3. Open set




In line 1 [protocol] selection "UDP" protocol; and that [open in pairs] option selecte "pairs",system will be prompted to




, selection is confirmed, the parameters of line 2 will be self-generated, so as to form a two-way communication. PLC's port and PC port range is & H401 - & HFFFF, the example is set to & H1000, PC's IP address is your computer's IP. Click [End set] to save, and form an Ethernet module and host two-way communication channel.

4. Just write to set the PLC in the main menu selection [online]->"PLC write", the "PLC/network parameters" in the content downloaded to the PLC, the correct execution, the writing on the work of the Ethernet parameters completed.

## Supported Device

### Fx1s

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Input Relay | X00-17 | ------ | OO | |
| Output Relay | Y00-15 | ------ | OO | |
| Auxiliary Relay | M000-511 | ------ | DDD | |
| Timer Relay | T00-63 | ------ | DD | |
| Counter Relay | C00-31 | ------ | DD | |
| Data Register Relay | D000.0-255.F | ------ | DDD.H | |
| Status Relay | S000-127 | ------ | DDD | |
| Timer | ------ | T00-63 | DD | |
| Counter | ------ | C00-31 | DD | |
| Data register | ------ | D000-255 | DDD | |
| Special Data Register | ------ | SD8000-8255 | DDDD | |
| Counter Memory（DWord） | ------ | C_dword235-255 | DDD | |

### Fx2n

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Input Relay | X000-377 | ------ | OOO | |
| Output Relay | Y000-377 | ------ | OOO | |
| Auxiliary Relay | M0000-3071 | ------ | DDDD | |
| Timer Relay | T000-255 | ------ | DDD | |
| Counter Relay | C000-199 | ------ | DDD | |
| Special Auxiliary Relay | SM8000-8255 | ------ | DDDD | |
| Status Relay | S000-999 | ------ | DDD | |
| Timer | ------ | T000-255 | DDD | |
| Counter | ------ | C000-199 | DDD | |
| Data register | ------ | D0000-7999 | DDDD | |
| Special Data Register | ------ | SD8000-8255 | DDDD | |
| Counter Memory（DWord） | ------ | C_dword200-255 | DDD | |

### FX2N-10GM/20GM

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Input Relay | X 00-67 | ------ | OO | |
| Output Relay | Y 00-67 | ------ | OO | |
| Auxiliary Relay | M 000-511 | ------ | DDD | |
| Special Auxiliary Relay | SM9000-9175 | ------ | DDDD | |
| Data register | ------ | D 000-3999 | DDDD | |
| Special Data Register | ------ | SD 9000-9599 | DDDD | |
| | ------ | FD 4000-6999 | DDDD | |

Note: bit devices don't support batch, but word device can.

## Fx3u

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Input Relay | X000-377 | ------ | OOO | |
| Output Relay | Y000-377 | ------ | OOO | |
| Timer Relay | T_bit 000-511 | ------ | DDD | |
| Counter Relay | C_bit 000-199 | ------ | DDD | |
| Data Register Relay | D_bit 0.0-7999.F | ------ | DDDD.H | |
| Status Relay | S0000-4095 | ------ | DDDD | |
| Internal relay | M0000-7679 | ------ | DDDD | |
| Special internal relay | SM8000-8511 | ------ | DDDD | |
| Timer | ------ | T000-511 | DDD | |
| Counter | ------ | C000-199 | DDD | |
| Data register | ------ | D0000-7999 | DDDD | |
| Special Data Register | ------ | SD8000-8511 | DDDD | |
| Counter Memory（D Word） | ------ | C_dword200-255 | DDD | |

## Q00jCPU

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Counter coil | CC0-1023 | ------ | DDDD | |
| Counter contact | CS0-1023 | ------ | DDDD | |
| Timer coil | TC0-2047 | ------ | DDDD | |
| Timer contact | TS0-2047 | ------ | DDDD | |
| Special link Relay | SB000-7FF | ------ | HHH | |
| Link Relay | B0000-1FFF | ------ | HHHH | |
| Status Relay | S0000-8191 | ------ | DDDD | |
| Edge Relay | V0000-2047 | ------ | DDDD | |
| Annunciator | F0000-2047 | ------ | DDDD | |
| Latch relay | L0000-8191 | ------ | DDDD | |

| | | | | |
|---|---|---|---|---|
| Special internal Relay | SM0000-2047 | ------ | DDDD | |
| Internal Relay | M0000-8191 | ------ | DDDD | |
| Output Relay | Y0000-1FFF | ------ | HHHH | |
| Input Relay | X0000-1FFF | ------ | HHHH | |
| File register | ------ | R000-7FF | HHH | |
| Special Link register | | SW0-3FF | HHH | |
| Link register | ------ | W000-7FF | HHH | |
| Special data register | ------ | SD0-2047 | DDDD | |
| Data register | ------ | D0-12287 | DDDDD | |
| Counter | ------ | CN0-1023 | DDDD | |
| Retentive timer value | ------ | SN0-2047 | DDDD | |
| Timer | ------ | TN0-2047 | DDDD | |

**Q00CPU / Q01CPU /Q02HCPU / Q06HCPU / Q12HCPU / Q25HCPU**

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Special Link Relay | SB00000-32767 | ------ | HHHH | |
| Link Relay | B00000-32767 | ------ | HHHH | |
| Edge Relay | V00000-32767 | ------ | DDDDD | |
| Annunciator Relay | F00000-32767 | ------ | DDDDD | |
| Latch Relay | L00000-32767 | ------ | DDDDD | |
| Special Internal Relay | SM0000-2047 | ------ | DDDD | |
| Internal Relay | M00000-32767 | ------ | DDDDD | |
| Output Relay | Y0000-8191 | ------ | HHHH | |
| Input Relay | X0000-8191 | ------ | HHHH | |
| Link register | ------ | W00000-10527 | HHHHH | |
| Timer（Current Value） | ------ | TN00000-23087 | DDDDD | |
| Counter（Current Value） | ------ | CN00000-23087 | DDDDD | |
| File register（Normal） | ------ | R00000-32767 | DDDDD | |
| Special Link register | ------ | SW0000-2047 | HHHH | |
| File register | ------ | ZR00000-65535 | DDDDD | |
| Data register | ------ | D00000-25983 | DDDDD | |
| Special data register | ------ | SD0000-2047 | DDDD | |

**Q02CPU**

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Special Link Relay | SB000-7FF | ------ | HHH | |
| Link Relay | B0000-1FFF | ------ | HHHH | |

| | | | | |
|---|---|---|---|---|
| Edge Relay | V0000-2047 | ------ | DDDD | |
| Annunciator Relay | F0000-2047 | ------ | DDDD | |
| Latch Relay | L0000-8191 | ------ | DDDD | |
| Special Internal Relay | SM0000-2047 | ------ | DDDD | |
| Internal Relay | M0000-8191 | ------ | DDDD | |
| Output Relay | Y0000-1FFF | ------ | HHHH | |
| Input Relay | X0000-1FFF | ------ | HHHH | |
| Link register | ------ | W0000-1FFF | HHHH | |
| Timer（Current Value） | ------ | TN0000-2047 | DDDD | |
| Counter（Current Value） | ------ | CN0000-1023 | DDDD | |
| File register（Normal） | ------ | R00000-32767 | DDDDD | |
| Special Link register | ------ | SW000-7FF | HHH | |
| File register | ------ | D00000-12287 | DDDDD | |
| Data register | ------ | SD0000-2047 | DDDD | |

**Mitsubishi QJ71E71 EtherNet Slave**

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Status Relay | S 000-8191 | ------ | DDDD | |
| Special Link Relay | SB 000-7FFF | ------ | HHHH | |
| Counter coil | CC 0-23087 | ------ | DDDDD | |
| Counter contact | CS 0-23087 | ------ | DDDDD | |
| Step coil | SC 0-23087 | ------ | DDDDD | |
| Step contact | SS 0-23087 | ------ | DDDDD | |
| Timer coil | TC 0-23087 | ------ | DDDDD | |
| Timer contact | TS 0-23087 | ------ | DDDDD | |
| Link Relay | B 0000-1FFF | ------ | HHHH | |
| Edge Relay | V 0-32767 | ------ | DDDDD | |
| Annunciator Relay | F 0-32767 | ------ | DDDDD | |
| Latch Relay | L 0-32767 | ------ | DDDDD | |
| Special Internal Relay | SM 0-2047 | ------ | DDDD | |
| Internal Relay | M 0-32767 | ------ | DDDD | |
| Output Relay | Y 0-1FFF | ------ | HHHH | |
| Input Relay | X 0-1FFF | ------ | HHHH | |
| Link register | ------ | W 0-291F | HHHH | |
| Timer（Current Value） | ------ | TN 0-23087 | DDDD | |
| Counter（Current Value） | ------ | CN 0-23087 | DDDDD | |
| Retentive timer value | | SN 0-23087 | DDDDD | |
| File register | ------ | R 0-32767 | DDDDD | |
| File register | ------ | ZR 0-1042431 | DDDDDDD | |

| | | | | |
|---|---|---|---|---|
| Special Link register | ------ | SW 0-7FF | HHH | |
| File register | ------ | D 0-25983 | DDDDD | |
| Data register | ------ | SD 0-2047 | DDDD | |

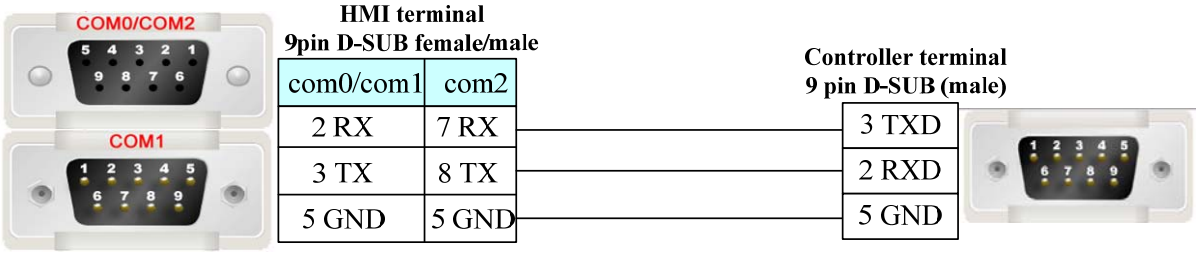
# Cable Diagram

## FX series RS232

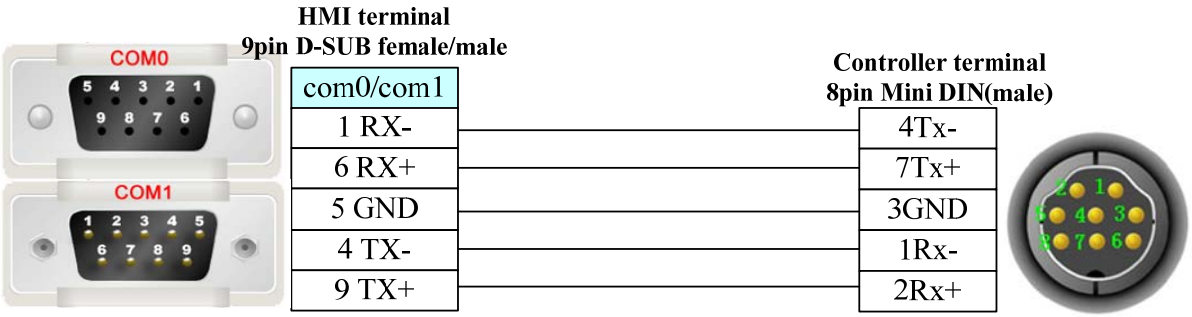
### CPU port communication

FX series programming cable using as communication cable.

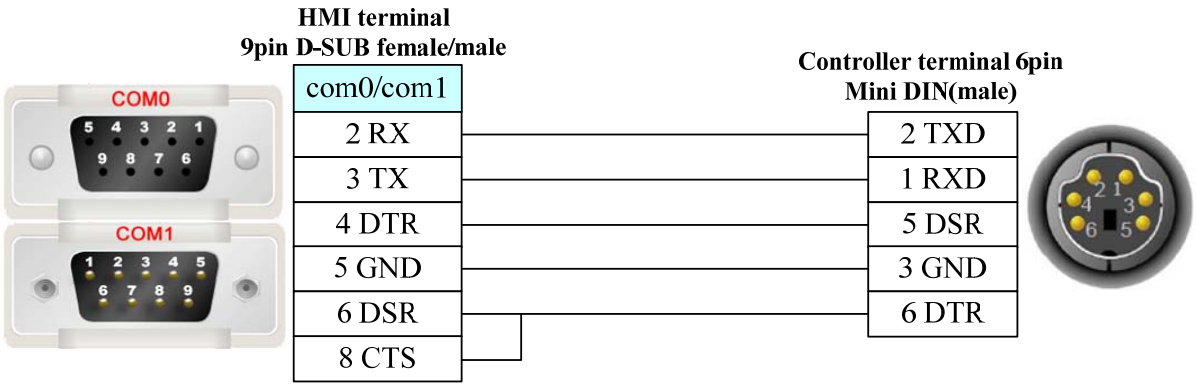
### communication module RS232BD communication cable



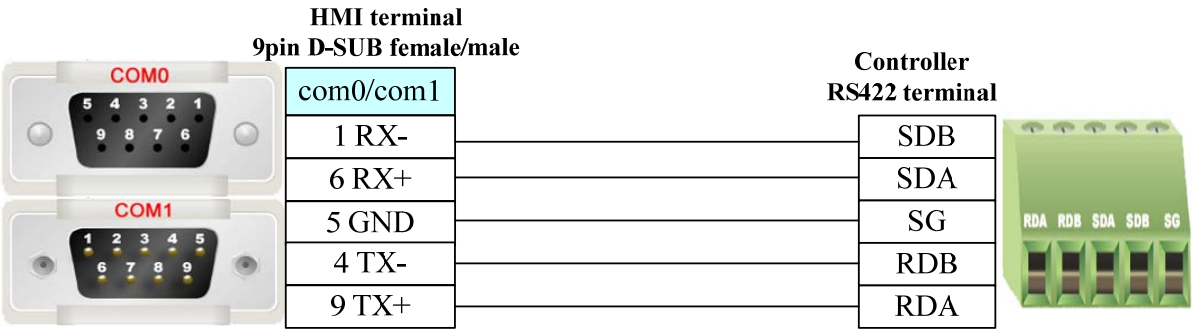

## FX series RS422 cable




## Q series RS232 cable



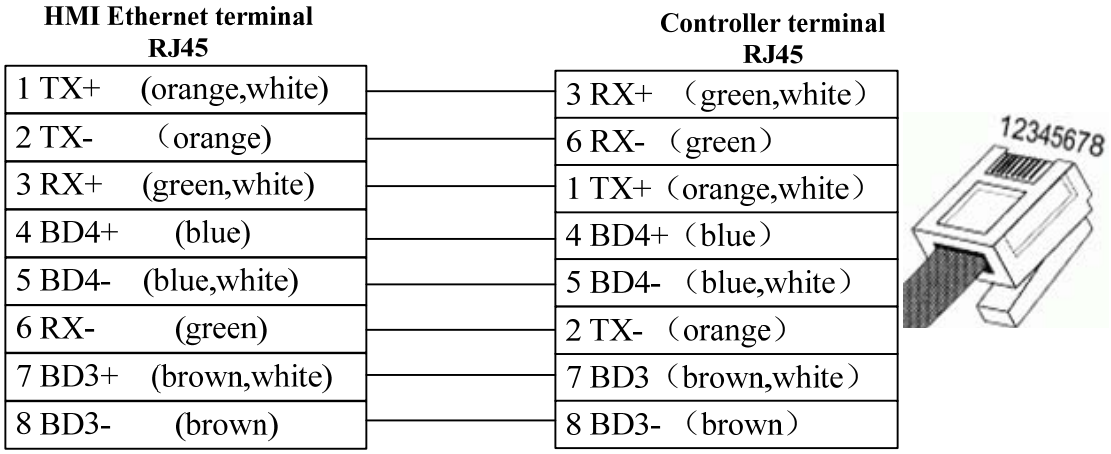

## FX\Q series RS422 cable （422 communication module）



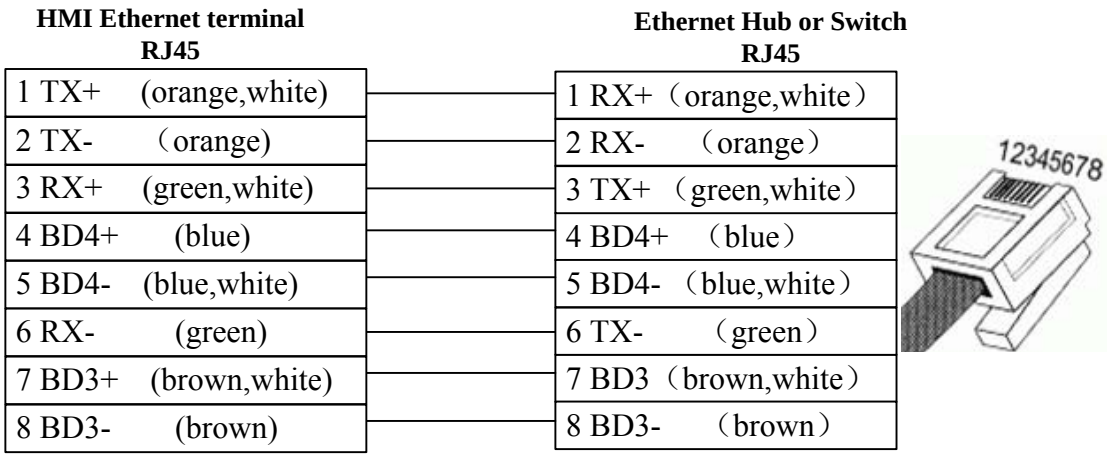

## Ethernet communication protocol cable

Cross-connection or crossover network cable can be used as communication cable via the hub or switch

a. Cross-connection cable diagram




b. crossover network cable diagram




# 6.46 Mks controller

## Serial Communication

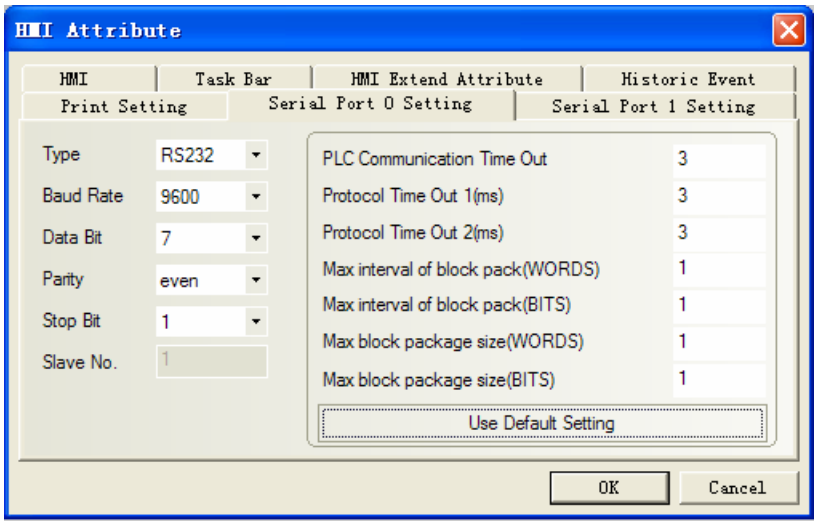
| Series | CPU | Link Module | Driver |
|---|---|---|---|
| BY125 | BY125 | RS232 on the CPU unit | MKS |

## System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| BY125 | BY125 | RS232 on the CPU unit | RS232 | Setting | Your owner cable |

## Communication Setting

**Default communication: 9600, 7, even, 1; station: 11**




## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Relay | CB 00-FF | ------ | HH | |
| Register | ------ | CD00-FF | HH | |
| External Register | ------ | ERCD 0000.00-FFFF.FF | HHHH.HH | |
| Internal data processing control address bit | | M1 0~9 | H | Read only |
| Internal data processing control address bit | | M2 0~9 | H | Read only |
| Internal data processing control address bit | | M3 0~9 | H | Read only |

**Note:**

1）ERCD is Extended register, the four position before radix point are C1,C2,C3,C4.The two positions after radix point are S1, S2.

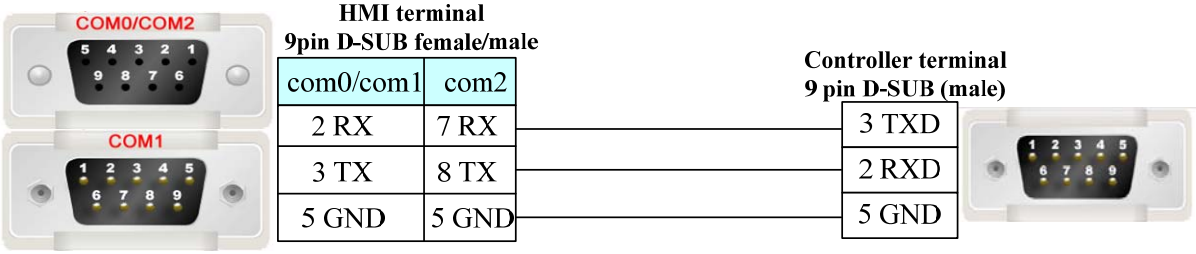
2）Parameter code corresponding with CD are C1,C2;

3）Parameter code corresponding with CB set to “1”;Eg:”Bit State Setting” part, addr type CB67, set the state to “1”.

4) M1 correspond to parameter ":"; M2 correspond to parameter";"; M3 correspond to parameter"<";

## Cable Diagram

### Mks controller RS232 communication cable




## 6.47 ModBus

### Serial Communication

| Series | CPU | Link Module | SIO type | Driver |
|---|---|---|---|---|
| Modbus RTU | MODBUS Compatible External Device | RS232 on the CPU unit | | Modbus RTU |
| Modbus RTU Extend | | RS232 on the CPU unit | | Modbus RTU Extend |
| Modbus RTU Slave | | RS232 on the CPU unit | | Modbus RTU Slave |
| Modbus RTU MT500 compatible | | RS232 on the CPU unit | | Modbus RTU MT500 compatible |
| Modbus ASCII | | RS232 on the CPU unit | | Modbus ASCII |
| Modbus TCP | | | Ethernet | Modbus TCP |
| Modbus TCP Slave | | | Ethernet | Modbus TCP Slave |
| Modbus UDP | | | Ethernet | Modbus UDP |
| Modbus UDP Slave | | | Ethernet | Modbus UDP Slave |

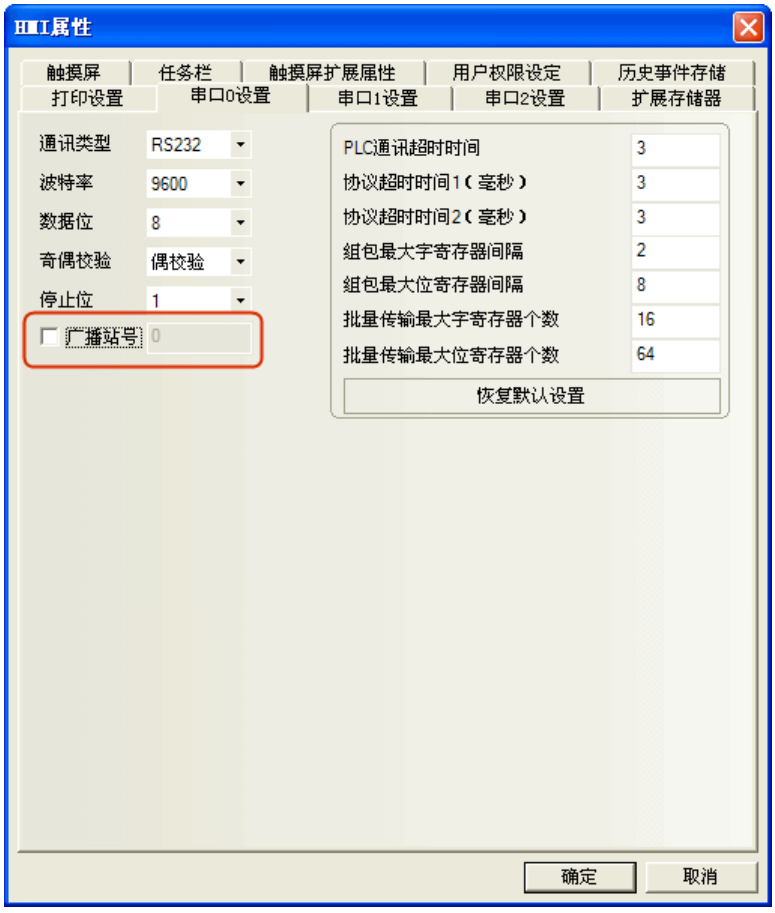
### System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| Modbus RTU | MODBUS Compatible External Device | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| Modbus RTU Extend | | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| Modbus RTU Slave | | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| Modbus RTU MT500 compatible | | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| Modbus ASCII | | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| Modbus TCP | | | Ethernet | Connection Configuration | |

| | | | | |
|---|---|---|---|---|
| Modbus TCP Slave | | | Ethernet | |
| Modbus UDP | | | Ethernet | Connection Configuration |
| Modbus UDP Slave | | | Ethernet | |

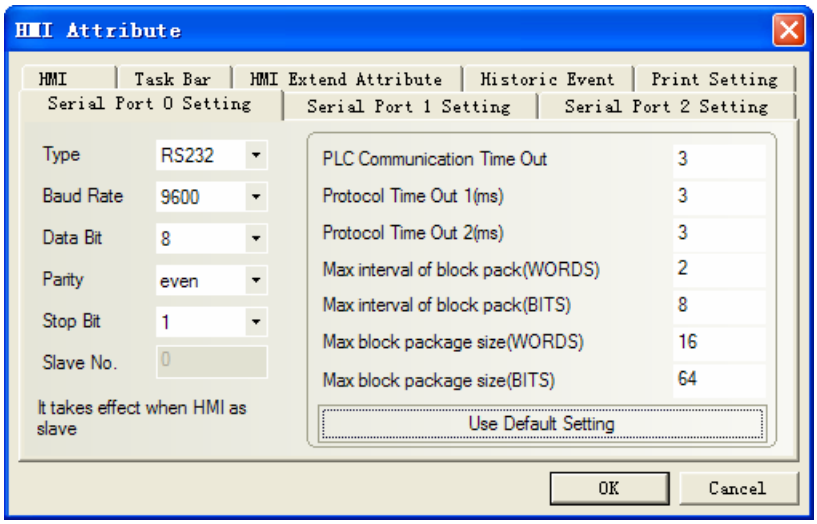
## Communication Setting

### Modbus RTU RS232 communication:9600, 8, even, 1; station: 1

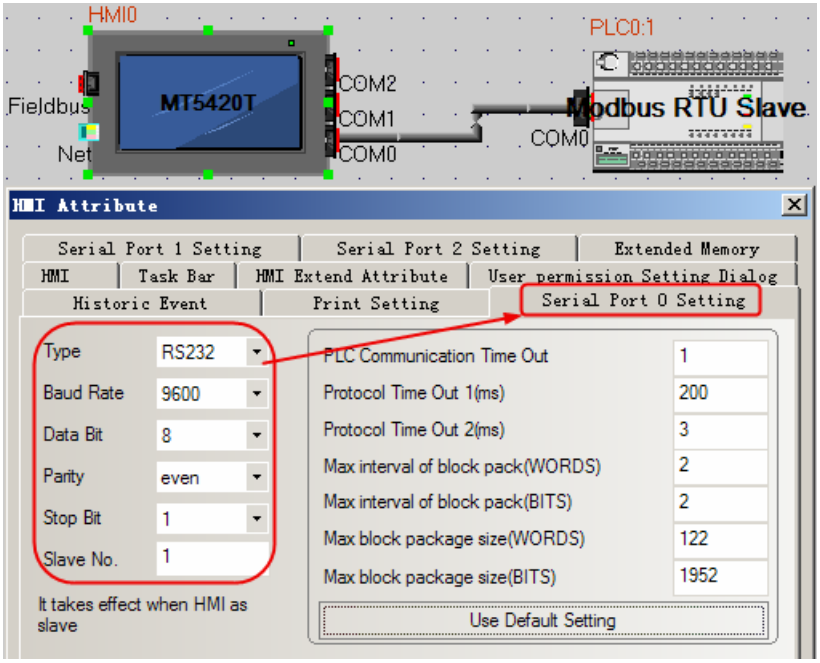



NOTE: 1. Modbus RTU protocol supports broadcasting station number, but the radio function only supports write operations, with a reading of properties for the components, can not use the radio function;
2. Radio features are used in two ways: First, write-only properties with components (Bit state setting device, "switch" method, except); multi-state setting device, "add value", "sub value", "JOG++", "JOG--" method excluded); Second, the use of macros, the macro programming, on the radio station to write the address number.

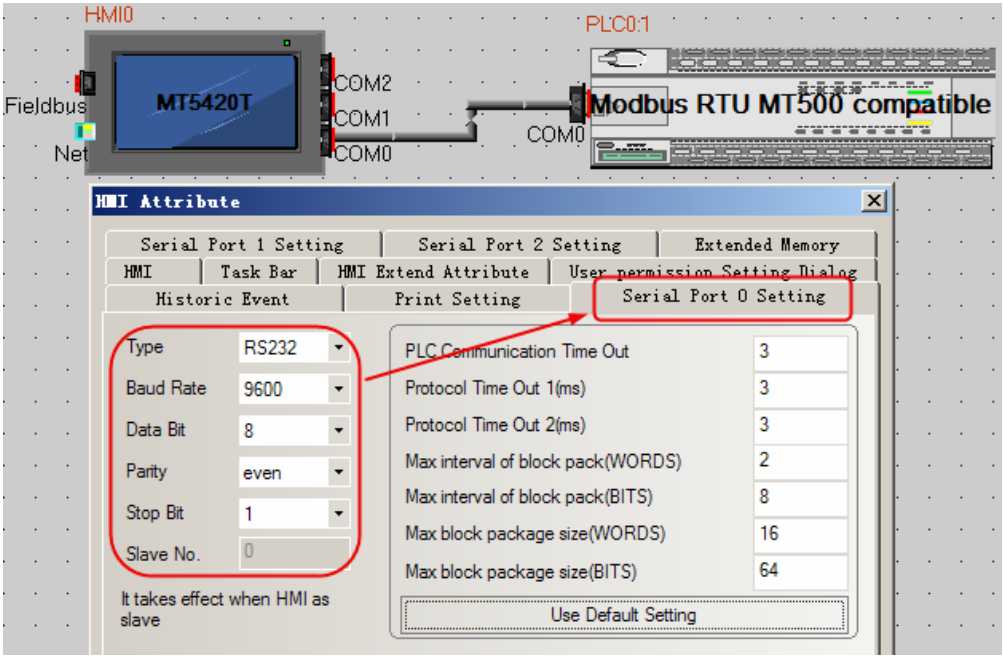
### Modbus RTU Extend RS232 communication : 9600, 8, even, 1; station: 1



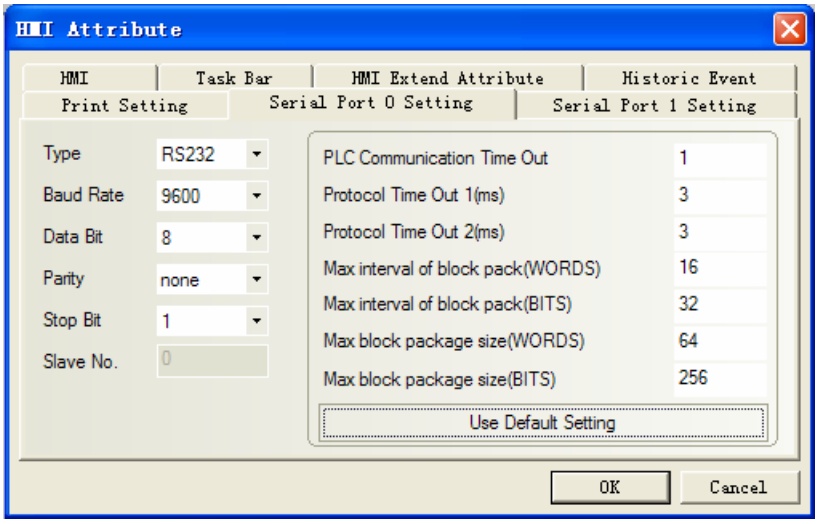

**Modbus RTU Slave RS232 default communication: 9600, 8, even, 1; station: 1**



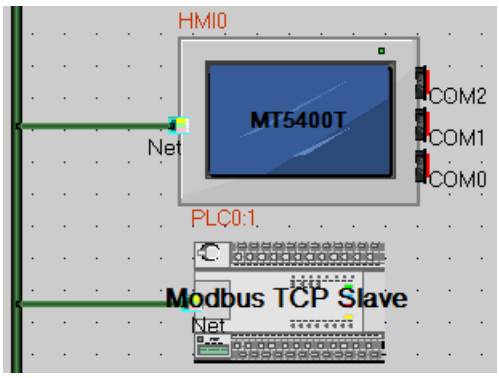

**Modbus RTU MT500 compatible RS232 default communication:** 9600, 8, even, 1; station: 1

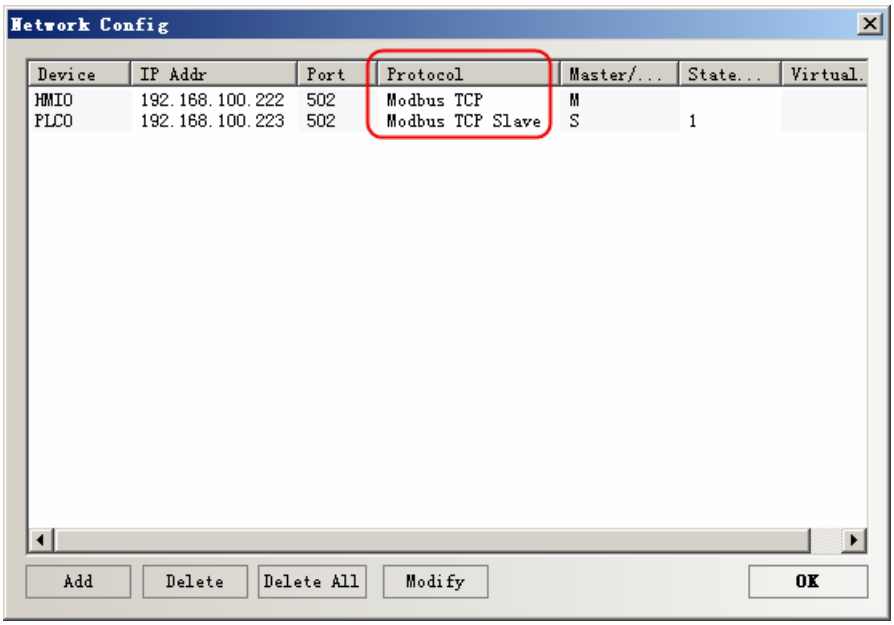



## MODBUS ASCII RS232 communication: 9600, 8, even, 1; station: 1

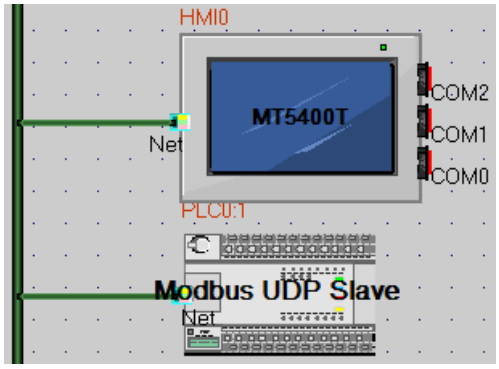


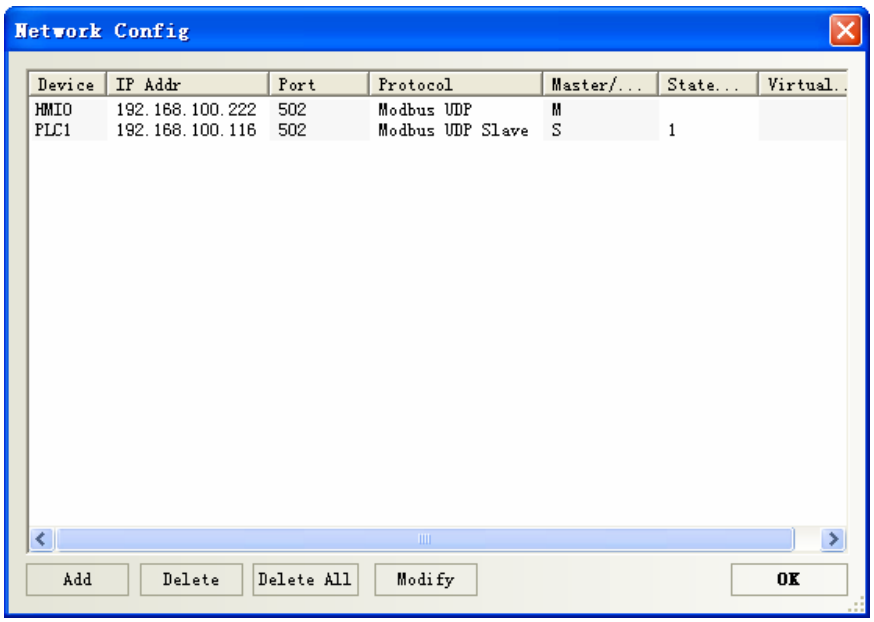

## Modbus TCP network configuration






## Modbus UDP network configuration




# Supported Device

## Modbus RTU

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Output Relay | 0X1-65535 | ------ | DDDDD | |
| Input Relay (read only) | 1X1-65535 | ------ | DDDDD | |
| Input Register (read only) | ------ | 3X1-65535 | DDDDD | |
| Output Register | ------ | 4X1-65535 | DDDDD | |

## Modbus RTU Extend

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Output Relay | 0X1-65535 | ------ | DDDDD | |
| Input Relay (read only) | 1X1-65535 | ------ | DDDDD | |
| Input Relay (read only) | 3X_bit1-65535 | ------ | DDDDD | |
| Output Relay | 4X_bit1-65535 | ------ | DDDDD | |
| Input Register (read only) | ------ | 3X1-65535 | DDDDD | |
| Output Register | ------ | 4X1-65535 | DDDDD | |
| 4x byte swap | ------ | 5X1-65535 | DDDDD | |
| 4x single word write | ------ | 6X1-65535 | DDDDD | |
| 4x double word swap | | 4X-DINV 1-65535 | DDDDD | |
| 3x double word swap | | 3X-DINV 1-65535 | DDDDD | |

Note: 5X is the byte counter; 4X-DINV, 3X-DINV is the word high and low-bit counter.

## Modbus RTU Slave

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Output Relay | LB 0-9999 | ------ | DDDDD | Mapping to 0x 1~9999 |
| Data Register | ------ | LW 0-65535 | DDDDD | Mapping to 4x 1~9999 |

## Modbus RTU MT500 compatible

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Output Relay | 0X 1-65535 | ------ | DDDDD | |
| Input Relay (read only) | 1X 1-65535 | ------ | DDDDD | |
| Input Register (read only) | ------ | 3X 1-65535 | DDDDD | |
| Output Register | ------ | 4X 1-65535 | DDDDD | |

## Modbus ASCII

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Output Relay | 0X1-65535 | ------ | DDDDD | |
| Input Relay (read only) | 1X1-65535 | ------ | DDDDD | |
| Input Register (read only) | ------ | 3X1-65535 | DDDDD | |
| Output Register | ------ | 4X1-65535 | DDDDD | |

## Modbus TCP Slave

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Output Relay | 0X 1-65535 | ------ | DDDDD | |

| | | | | |
|---|---|---|---|---|
| Input Relay (read only) | 1X 1-65535 | ------ | DDDDD | |
| Input Relay (read only) | 3X_bit 1.00-65535.15 | ------ | DDDDD.DD | |
| Data relay | 4X_bit 1.00-65535.15 | ------ | DDDDD.DD | |
| Input Register (read only) | ------ | 3X 1-65535 | DDDDD | |
| Output Register | ------ | 4X 1-65535 | DDDDD | |
| Data Register | ------ | 4X-DINV 1-65535 | DDDDD | |
| Data Register | ------ | 3X-DINV 1-65535 | DDDDD | |

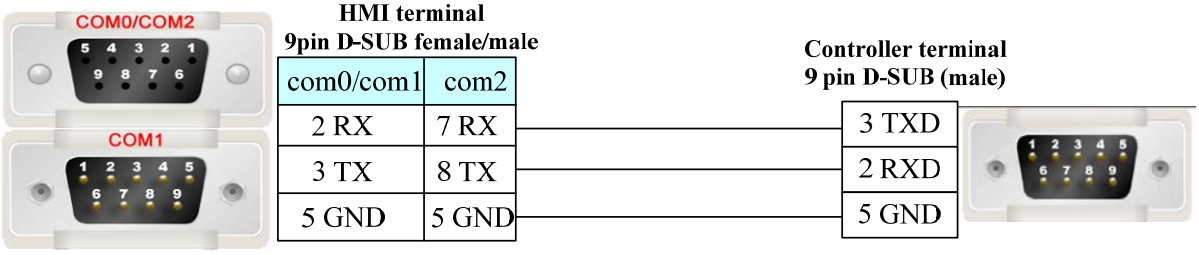
Note: 4X-DINV, 3X-DINV is the word high and low-bit counter.

### Modbus UDP Slave

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Output Relay | 0X1-65535 | ------ | DDDDD | |
| Input Relay (read only) | 1X1-65535 | ------ | DDDDD | |
| Input Register (read only) | ------ | 3X1-65535 | DDDDD | |
| Output Register | ------ | 4X1-65535 | DDDDD | |

## Cable Diagram

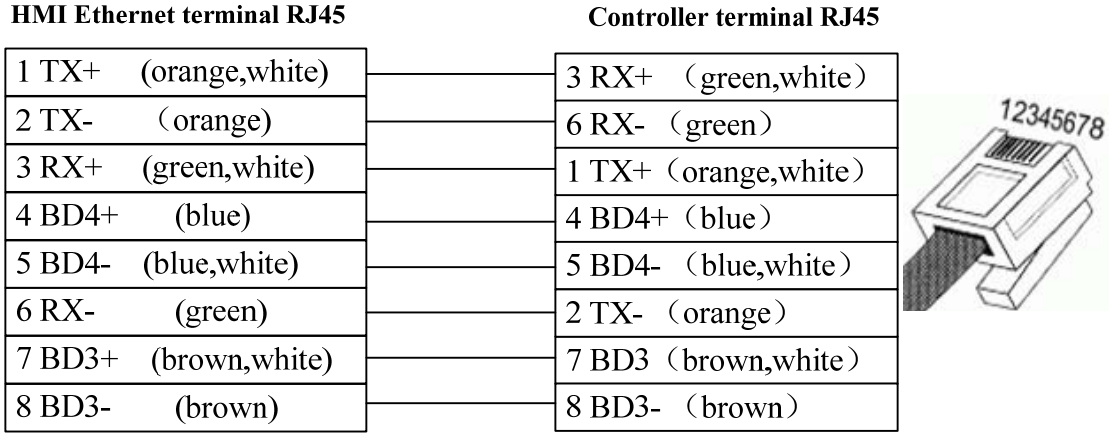
### RS232 communication cable




### Ethernet communication cable

Cross-connection or crossover network cable can be used as communication cable via the hub.

a. Cross-connection cable:




b. crossover network cable:

| HMI Ethernet terminal RJ45 | Ethernet Hub or Switch RJ45 |
|---|---|
| 1 TX+ (orange,white) | 1 RX+（orange,white） |
| 2 TX- （orange) | 2 RX- （orange） |
| 3 RX+ (green,white) | 3 TX+ （green,white） |
| 4 BD4+ (blue) | 4 BD4+ （blue） |
| 5 BD4- (blue,white) | 5 BD4- （blue,white） |
| 6 RX- (green) | 6 TX- （green） |
| 7 BD3+ (brown,white) | 7 BD3（brown,white） |
| 8 BD3- (brown) | 8 BD3- （brown） |

## 6.48 MODROL

### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| MODROL | IMS-GF3-4011E | RS485 on the CPU unit | MODROL |

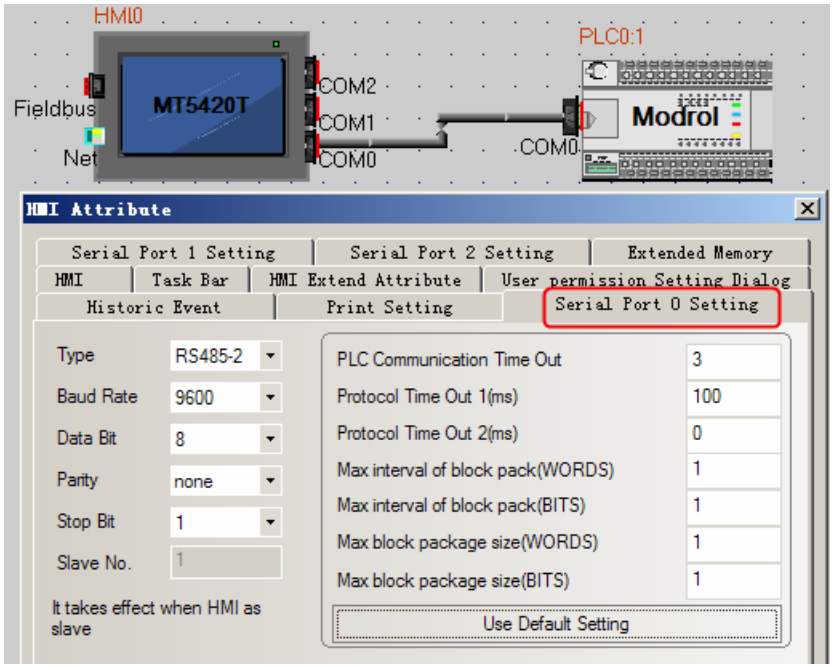
### System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| MODROL | IMS-GF3-4011E | RS485 on the CPU unit | RS485 | Setting | Your owner cable |

### Communication Setting

#### HMI

**Default communication:** 9600, 8, none, 1; station: 1

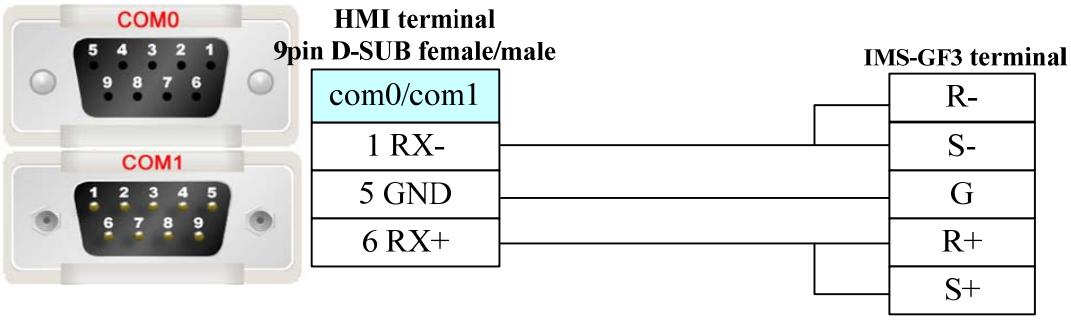



## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| | ------ | D_1 0-9999 | DDDD | One byte |
| | ------ | D_2 0-9999 | DDDD | Two byte |
| | ------ | D_3 0-9999 | DDDD | Three byte |

## Cable Diagram

### MODROL RS485




# 6.49 OE MAX

## Serial Communication

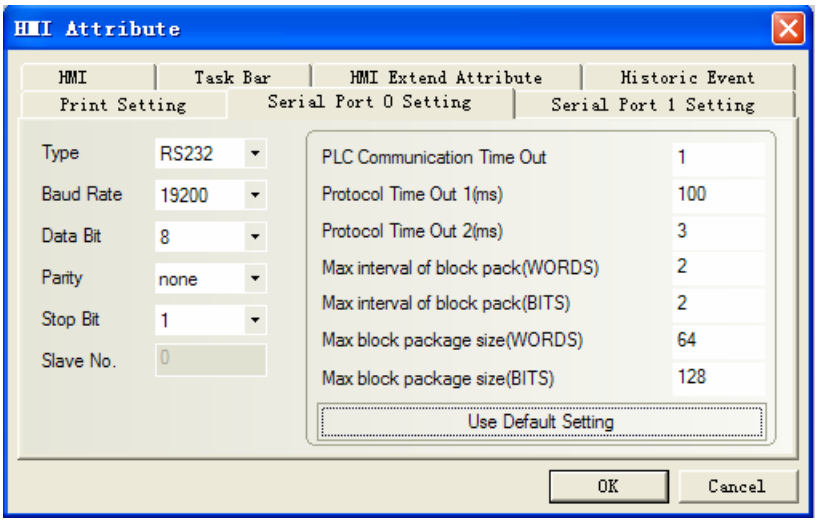
| Series | CPU | Link Module | Driver |
|---|---|---|---|
| NX7 | NX7 | RS232 on the CPU unit | OE MAX NX7 |

## System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| NX7 | NX7 | RS232 on the CPU unit | RS232 | Setting | Your owner cable |

## Communication Setting

**Default communication:** 19200, 8, none, 1; station: 1



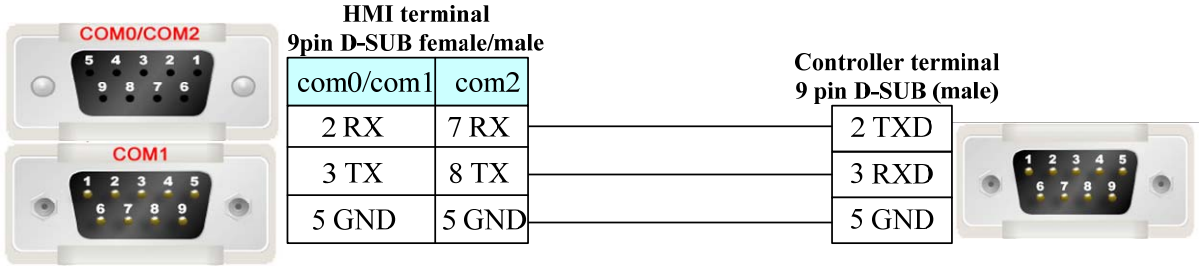

## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Input/Output Relay | R 0.0–127.15 | ------ | DDD.DD | |
| General Relay | L 0.0–63.15 | ------ | DD.DD | |
| General Relay | M 0.0–127.15 | ------ | DDD.DD | |
| Keep Relay | K 0.0–127.15 | ------ | DDD.DD | |
| Timer Relay | TC 0–255 | ------ | DDD | |
| Special Relay | F 0.0–15.15 | ------ | DD.DD | |
| Internal HSC | ------ | R_word 0-127 | DDD | |
| General Register | ------ | L_word 0-63 | DD | |
| General Register | ------ | M_word 0-127 | DDD | |
| Keep Register | ------ | K_word 0-127 | DDD | |
| General Register | ------ | F_word 0-15 | DD | |
| Timer/Counter Register | ------ | SV_word 0-255 | DDD | |
| Timer/Counter Register | ------ | PV_word 0-255 | DDD | |
| General Register | ------ | W_word 0-2047 | DDDD | |
| Special Register | ------ | SR_word 0-511 | DDD | |

| | | | | |
|---|---|---|---|---|
| Internal HSC | ------ | R_Dword 0-127 | DDD | |
| General Register | ------ | L_Dword 0-63 | DD | |
| General Register | ------ | M_Dword 0-127 | DDD | |
| Keep Register | ------ | K_Dword 0-127 | DDD | |
| Special Register | ------ | F_Dword 0-15 | DD | |
| Timer/Counter Register | ------ | SV_Dword 0-255 | DDD | |
| Timer/Counter Register | ------ | PV_Dword 0-255 | DDD | |
| General Register | ------ | W_Dword 0-2047 | DDDD | |
| Special Register | ------ | SR_Dword 0-511 | DDD | |

## Cable Diagram

### Oemax RS232 communication cable




# 6.50 Omron Corporation

## Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| SYSMAC C | CP1H<br>CP1L<br>CP1E | CP1W-CIF01 | Omron C Series Host Link<br>Omron CP1H_CP1L |
| | | CP1W-CIF11 | |
| | C200H | C200H-LK202<br>C120-LK201-V1 | Omron C Series Host Link |
| | C200HS | C200H-LK201<br>C200H-LK202<br>C120-LK201-V1 | |
| | | Link I/F on the CPU unit | |
| | | Peripheral port on the CPU unit | |
| | C500<br>C500F<br>C1000H<br>C2000<br>C2000H | C120-LK201-V1<br>C120-LK202-V1<br>C500-LK201-V1<br>C500-LK203 | |

| | | | |
|---|---|---|---|
| | C1000HF | C500-LK201-V1<br>C500-LK203 | |
| | C20H/28H/40H | Link I/F on the CPU unit | |
| | C20PF/28PF<br>C40PF/60PF | C120-LK201-V1<br>C120-LK202-V1 | |
| | C120<br>C120F | C120-LK201-V1<br>C120-LK202-V1 | |
| | CQM1-CPU11 | Peripheral port on the CPU unit | |
| | CQM1-CPU21 | RS232C port on the CPU unit | |
| | CQM1-CPU41<br>CQM1-CPU42<br>CQM1-CPU43<br>CQM1-CPU44<br>CQM1-CPU41-V1<br>CQM1-CPU42-V1<br>CQM1-CPU43-V1<br>CQM1-CPU44-V1 | Peripheral port on the CPU unit | |
| | CPM2C | Peripheral port on the CPU unit | |
| | | Peripheral port on the CPM2C-CIF01 | |
| | | RS232C port on the CPM2C-CIF01 | |
| | | RS232C port on the CPM2C-CIF11 | |
| | | Terminal block on the CPM2C-CIF11 | |
| | CQM1H-CPU11<br>CQM1H-CPU21 | Peripheral port on the CPU unit | |
| | | RS232 on the CPU unit | |
| | CQM1H-CPU51<br>CQM1H-CPU61 | Peripheral port on the CPU unit | |
| | | RS232 on the CPU unit | |
| | | RS232C port on the CQM1H-SCB41 | |
| | | RS422A/485 port on the CQM1H-SCB41 | |
| | CPM1<br>CPM1A<br>CPM1A-V1<br>CPM2AH | RS232 on the CPU unit | Omron C Series Host Link |
| | | | Omron CPM1AH _CPM2AH |
| SYSMAC CJ | CJ1G-CPU45 | RS232 on the CPU unit | |
| | CJ1G-CPU44 | Peripheral port on the CPU unit | |
| | CJ1G-CPU45H<br>CJ1G-CPU44H<br>CJ1G-CPU43H<br>CJ1G-CPU42H<br>CJ1M-CPU23<br>CJ1M-CPU22<br>CJ1M-CPU21<br>CJ1M-CPU13<br>CJ1M-CPU12<br>CJ1M-CPU11 | | Omron CJ_CS Series Host Link |

| | | | |
|---|---|---|---|
| | CJ1H-CPU66H<br>CJ1H-CPU65H | | |
| SYSMAC CS1 | CS1G-CPU45<br>CS1G-CPU44<br>CS1G-CPU43<br>CS1G-CPU42<br>CS1G-CPU45H<br>CS1G-CPU44H<br>CS1G-CPU43H<br>CS1G-CPU42H<br>CS1G-CPU45-V1<br>CS1G-CPU44-V1<br>CS1G-CPU43-V1<br>CS1G-CPU42-V1<br>CS1H-CPU67<br>CS1H-CPU66<br>CS1H-CPU65<br>CS1H-CPU64<br>CS1H-CPU63<br>CS1H-CPU67H<br>CS1H-CPU66H<br>CS1H-CPU65H<br>CS1H-CPU64H<br>CS1H-CPU63H<br>CS1H-CPU67-V1<br>CS1H-CPU66-V1<br>CS1H-CPU65-V1<br>CS1H-CPU64-V1<br>CS1H-CPU63-V1 | RS232 on the CPU unit<br>Peripheral port on the CPU unit | Omron CJ_CS Series Host Link |

**Note: Don't hot plug ! ! !**

## Network Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| SYSMAC CJ | CJ2M-CPU35 | CJ1W-ETP21 | Omron CJ series EtherNet Slave |

## Serial System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| SYSMAC C | CP1H<br>CP1L<br>CP1E | CP1W-CIF01 | RS232 | Setting | Your owner cable |
| | | CP1W-CIF11 | RS485-4 | Setting | Your owner cable |
| | CPM2AH | RS232 on the CPU unit | RS232 | Setting<br>Setting | Your owner cable |

| | | | | | |
|---|---|---|---|---|---|
| SYSMAC CJ | CJ1G-CPU45<br>CJ1G-CPU44<br>CJ1G-CPU45H<br>CJ1G-CPU44H<br>CJ1G-CPU43H<br>CJ1G-CPU42H<br>CJ1M-CPU23<br>CJ1M-CPU22<br>CJ1M-CPU21<br>CJ1M-CPU13<br>CJ1M-CPU12<br>CJ1M-CPU11<br>CJ1H-CPU66H<br>CJ1H-CPU65H | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | Peripheral port on the CPU unit (Must set the switch DIP 4 to be on) | RS232 | Setting | Your owner cable |
| SYSMAC CS | CS1G-CPU45<br>CS1G-CPU44<br>CS1G-CPU43<br>CS1G-CPU42<br>CS1G-CPU45H<br>CS1G-CPU44H<br>CS1G-CPU43H<br>CS1G-CPU42H<br>CS1G-CPU45-V1<br>CS1G-CPU44-V1<br>CS1G-CPU43-V1<br>CS1G-CPU42-V1<br>CS1H-CPU67<br>CS1H-CPU66<br>CS1H-CPU65<br>CS1H-CPU64<br>CS1H-CPU63<br>CS1H-CPU67H<br>CS1H-CPU66H<br>CS1H-CPU65H<br>CS1H-CPU64H<br>CS1H-CPU63H<br>CS1H-CPU67-V1<br>CS1H-CPU66-V1<br>CS1H-CPU65-V1<br>CS1H-CPU64-V1<br>CS1H-CPU63-V1 | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | Peripheral port on the CPU unit (Must set the switch DIP 4 to be on) | RS232 | Setting | Your owner cable |

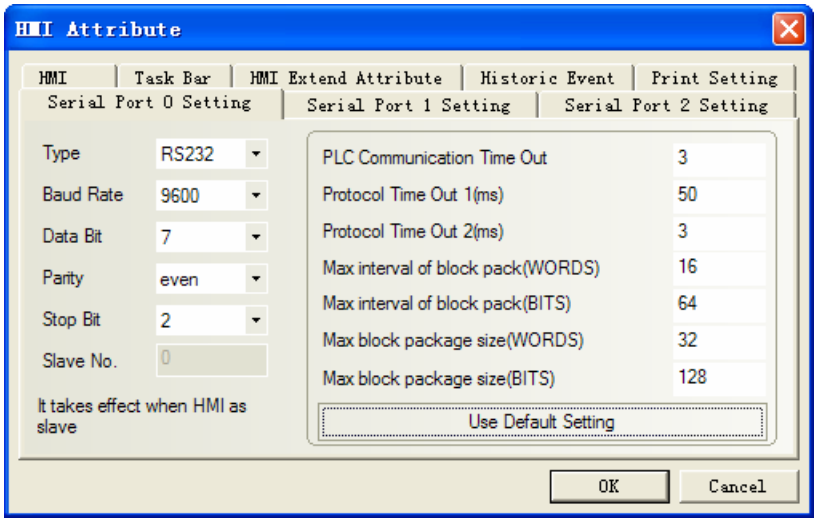
## Network System configuration

| Series | CPU | Link Module | Connect Type | Parameter | Cable |
|---|---|---|---|---|---|
| SYSMAC CJ | CJ2M-CPU35 | CJ1W-ETP21 | Ethernet | Setting | Your owner cable |

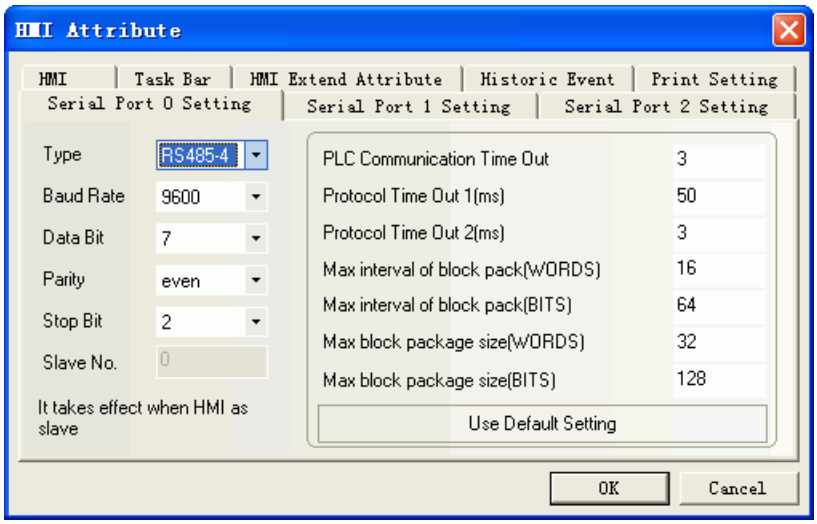
## Serial Communication Setting

**OMRON CP1H_CP1L default communication:** 9600, 7, even, 2; station: 0

CP1W-CIF01 RS232 communication




CP1W-CIF01 RS422 communication



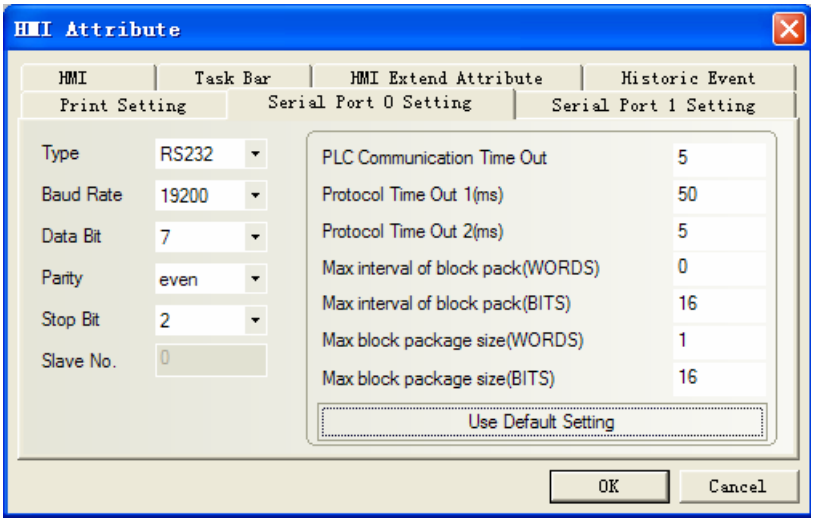

**Note**：cp1h switch DIP1—6 all set OFF.

| NO. | Setup contents | default status |
|---|---|---|
| 1 | ON: write enable<br>OFF:write disable | OFF |
| 2 | ON: program automaticlly transmit from card to PLC when power up<br>OFF: program can't automaticlly transmit from card to PLC when power up | OFF |
| 3 | OFF: OFF(default) | OFF |
| 4 | ON: communication port1,Toolbus(default)<br>OFF:Port 1 communications settings according to the PLC system CPU setting | OFF |

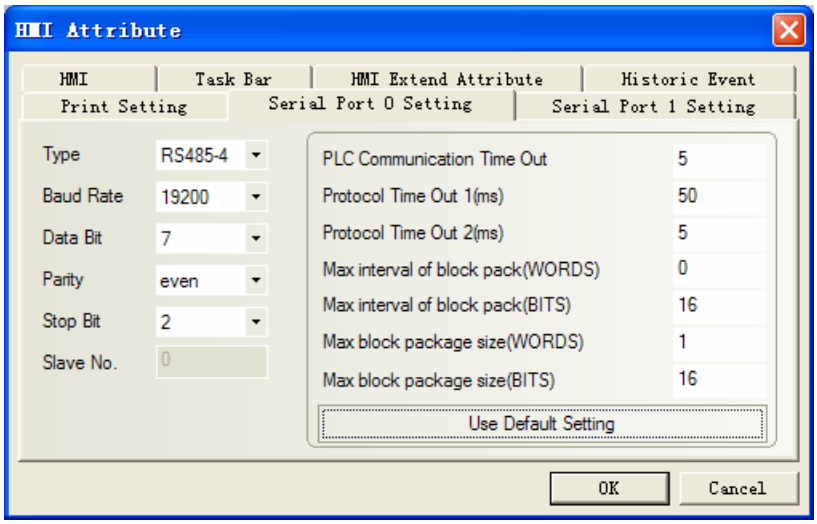
| | | |
|---|---|---|
| 5 | ON: communication port2,Toolbus(default)<br>OFF:Port 2 communications settings according to the PLC system CPU setting | OFF |
| 6 | ON: customer use ( A395.12 = ON)<br>OFF: customer use ( A395.12 = OFF) | OFF |

**Omron C Series Host Link protocol default communication:** 19200, 7, even, 2; station: 0

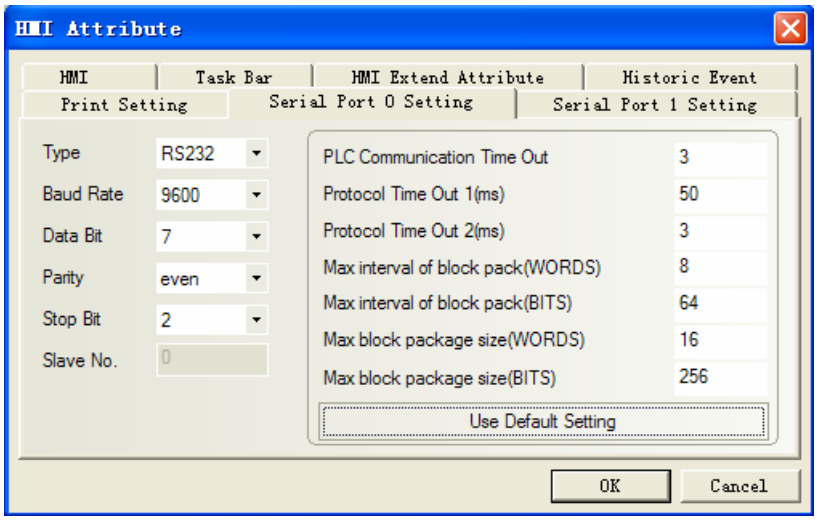
RS232 communication




RS422 communication

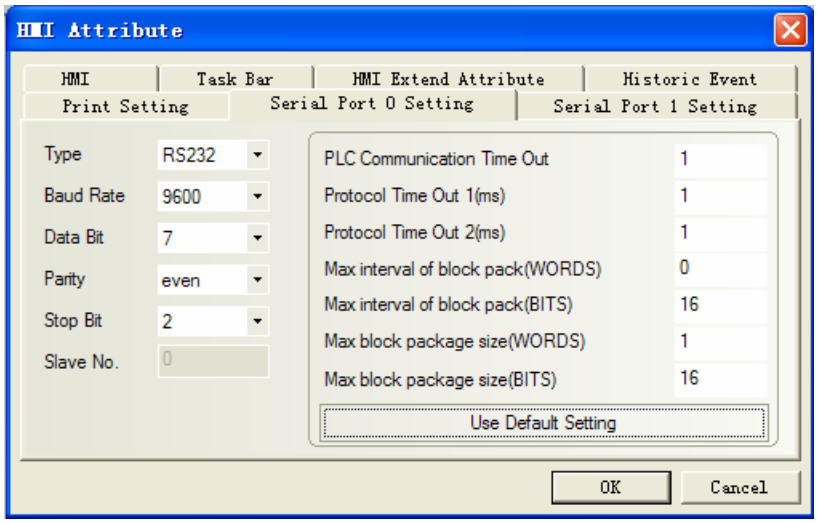



**CPM1AH _CPM2AH protocol RS232 default communication:** 9600, 7, even, 2; station: 0



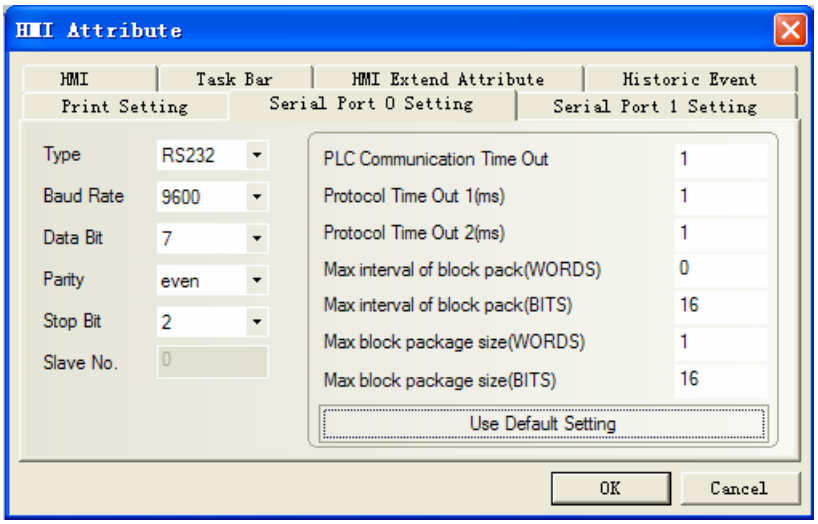

**Note:** Select custom communication parameters (non-standard communication parameters), the switch of plc must be OFF.

**Omron CJ1M-CPU22 RS232 default communication:** 9600, 7, even, 2; station: 0



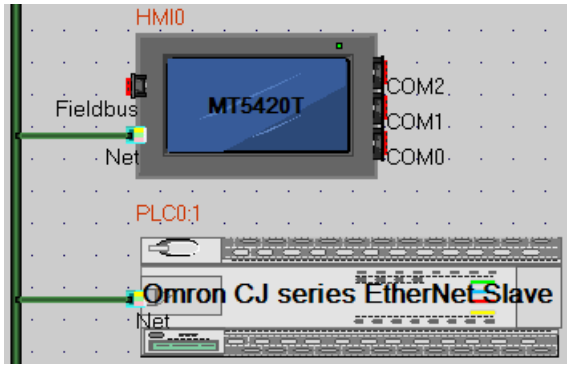

**Note:** 1.CJ1M switch DIP: sw1, sw2, sw3, sw5, sw8 must be off, but sw4, sw6, sw7 are optional.
2. CJ1M switches DIP 1—8 are OFF (default).

**Omron CS series RS232 default communication:** 9600, 7, even, 2; station: 0

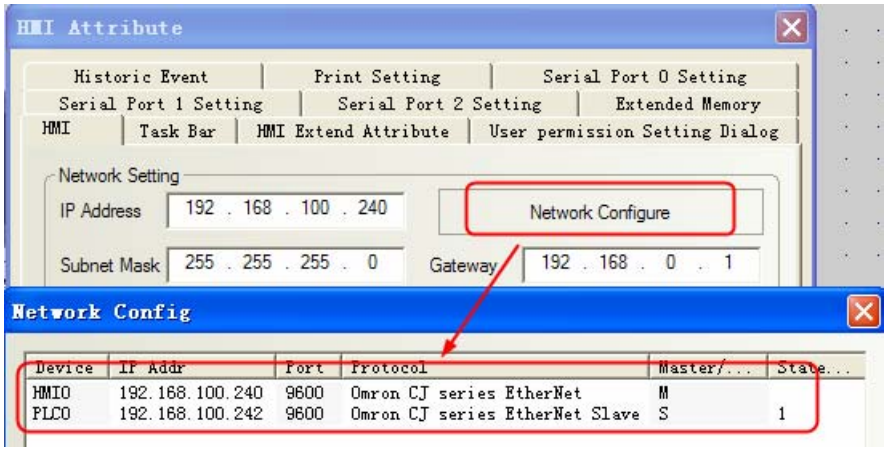



## Network Communication Setting

### HMI

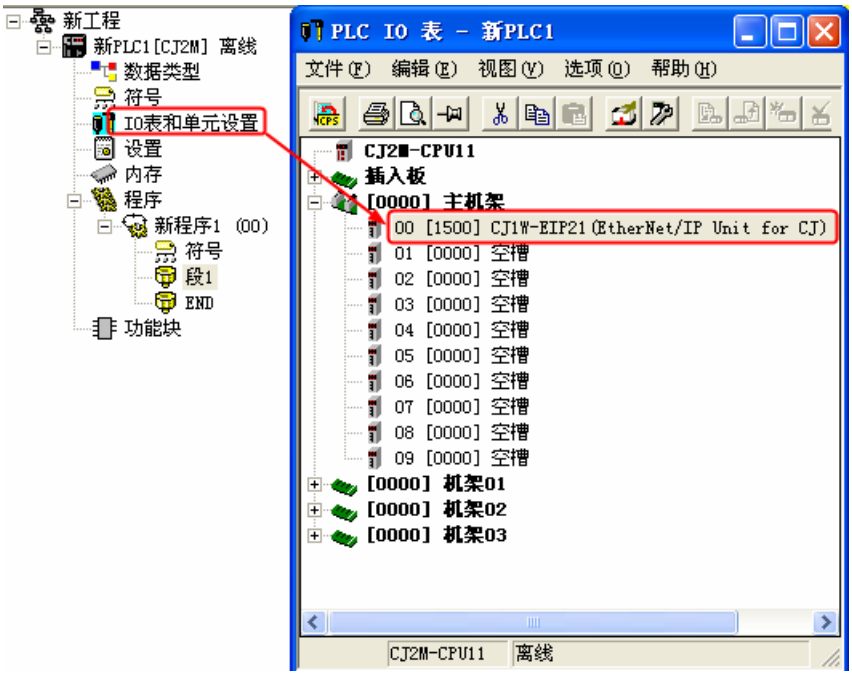



### Network configuration

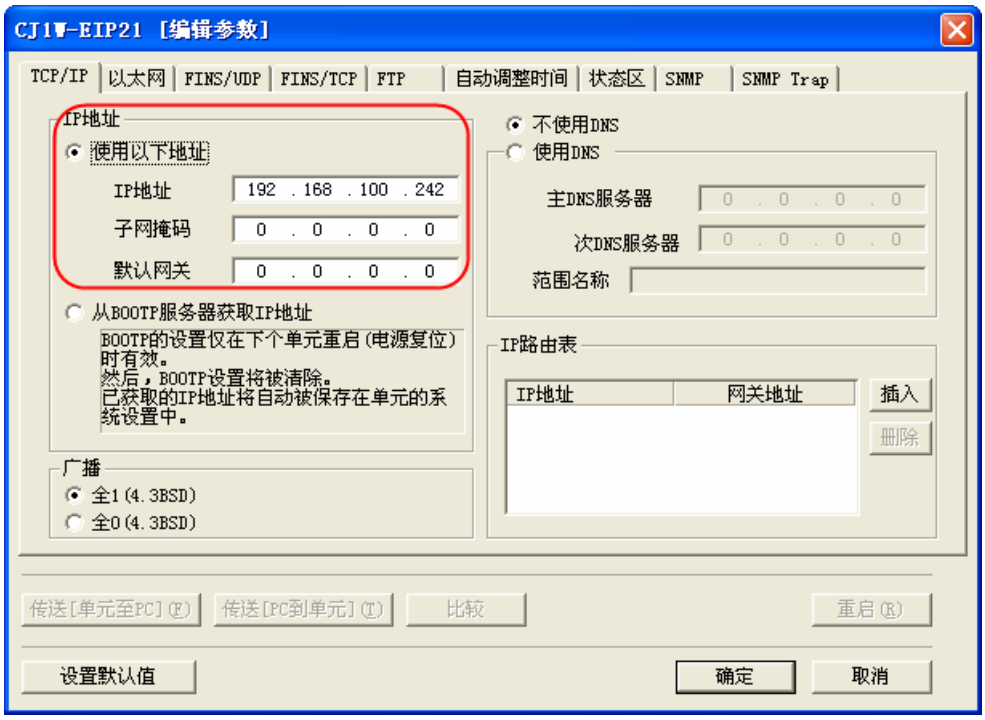



### PLC setting

1. Double-click the IO table and the unit set, find the Ethernet communication module




2. Double-click the Ethernet communication module, set the parameters




# Supported Device

## Omron C Series Host Link

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Latch Relay | HR00.00-99.15 | ------ | DD.DD | |
| Data Memory Relay | DM0000.00-6655.15 | ------ | DDDD.DD | |
| Data Link Relay | LR00.00-63.15 | ------ | DD.DD | |
| Auxiliary Memory Relay | AR00.00-959.15 | ------ | DD.DD | |

| | | | | |
|---|---|---|---|---|
| Internal Auxiliary Relay | CIO_IR000.00-511.15 | ------ | DDD.DD | |
| Counter（Current Value） | ------ | CNT000-511 | DDD | |
| Timer（Current Value） | ------ | TIM000-511 | DDD | |
| Latch Register | ------ | HR00-99 | DD | |
| Data Memory Register | ------ | DM0000-6655 | DDDD | |
| Link Register | ------ | LR00-63 | DD | |
| Auxiliary Memory Register | ------ | AR000-959 | DDD | |
| Internal Auxiliary Register | ------ | CIO_IR000-511 | DDD | |

### Omron CP1H_CP1L

| Device | Bit Address | Word Address | Format |
|---|---|---|---|
| Work Relay | W_bit 0.00-511.15 | ------ | DDD.DD |
| Latch Relay | H_bit 0.00-1536.00 | ------ | DDDD.DD |
| Data Memory Relay | D_bit 0.00-32768.00 | ------ | DDDDD.DD |
| Counter Relay | C_bit 0.00-4095.15 | ------ | DDDD.DD |
| Timer Relay | T_bit 0.00-4095.15 | ------ | DDDD.DD |
| Auxiliary Memory Relay | A_bit 0.00-960.00 | ------ | DDD.DD |
| Internal Auxiliary Relay | CIO_bit 0.00-6144.00 | ------ | DDDD.DD |
| Work Register | ------ | W_word 0-511 | DDD |
| Latch Register | ------ | H_word 0-1535 | DDDD |
| Data Memory Register | ------ | D_word 0-32767 | DDDDD |
| Counter（Current Value） | ------ | C_word 0-4095 | DDDD |
| Timer（Current Value） | ------ | T_word 0-4095 | DDDD |
| Auxiliary Memory Register | ------ | A_word 0-959 | DDD |
| I/O and Internal Auxiliary Register | ------ | CIO_word 0-6143 | DDDD |

### Omron CPM1AH_ CPM2AH

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Latch Relay | HR 0.00-4095.15 | ------ | DDDD.DD | |
| Data Link Relay | LR 0.00-4095.15 | ------ | DDDD.DD | |
| Special Auxiliary Relay | AR 0.00-4095.155 | ------ | DDDD.DD | |
| Internal Auxiliary Relay | IR 0.00-4095.15 | ------ | DDDD.DD | |
| Timer/counter Register | ------ | TC 0-255 | DDD | |
| Data Memory Register | ------ | DM 0-9999 | DDDD | |

### Omron CJ_CS Series Host Link

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Channel I/O Relay | CIO0000.00-6143.15 | ------ | DDDD.DD | |
| Internal Auxiliary Relay | WR000.00-511.15 | ------ | DDD.DD | |
| Special Auxiliary Relay | AR000.00-959.15 | ------ | DDD.DD | |
| Latch Relay | HR000.00-511.15 | ------ | DDD.DD | |
| Timer Relay (Timer Up Flag) | TIM0000-4095 | ------ | DDDD | |
| Counter Relay(Counter Up Flag) | CNT0000-4095 | ------ | DDDD | |

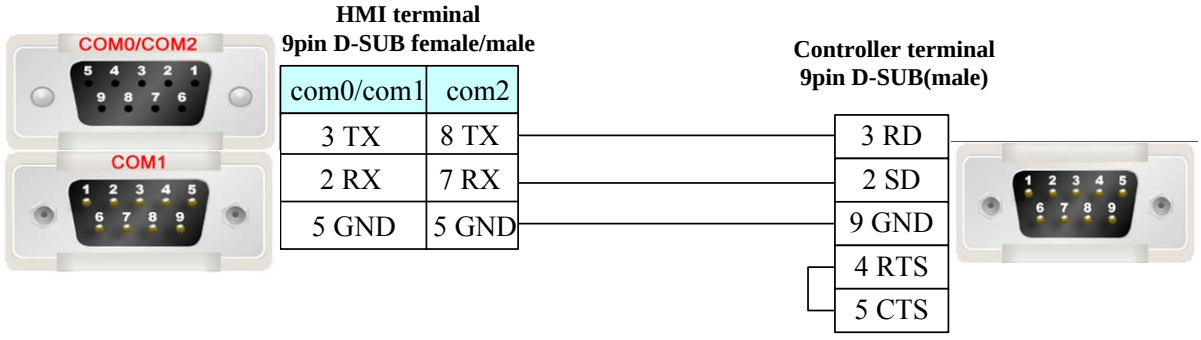
| | | | | |
|---|---|---|---|---|
| Data Memory | DM00000.00-32767.15 | ------ | DDDDD.DD | |
| Channel I/O Register | ------ | CIO0000-6143 | DDDD | |
| Internal Auxiliary Register | ------ | WR000-511 | DDD | |
| Special Auxiliary Register | ------ | AR000-959 | DDD | |
| Latch Register | ------ | HR000-511 | DDD | |
| Timer (current Value) | ------ | TIM0000-4095 | DDDD | |
| Counter (Current Value) | ------ | CNT0000-4095 | DDDD | |
| Data Memory Register | ------ | DM00000-32767 | DDDDD | |
| Index Register | ------ | IR00-15 | DD | |
| Data Register | ------ | DR00-15 | DD | |

### Omron CJ series EtherNet Slave

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Channel I/O Relay | CIO 0.00-6143.15 | ------ | DDDD.DD | |
| Internal Auxiliary Relay | W 0.00-511.15 | ------ | DDD.DD | |
| Special Auxiliary Relay | A 0.00-959.15 | ------ | DDD.DD | |
| Latch Relay | H 0.00-511.15 | ------ | DDD.DD | |
| Timer Relay (Timer Up Flag) | T 0-4095 | ------ | DDDD | |
| Counter Relay(Counter Up Flag) | C 0-4095 | ------ | DDDD | |
| TKB | TKB 0-31 | ------ | DDDDD.DD | |
| Channel I/O Register | ------ | CIO 0-6142 | DDDD | |
| Internal Auxiliary Register | ------ | W 0-511 | DDD | |
| Special Auxiliary Register | ------ | A 0-959 | DDD | |
| Latch Register | ------ | H 0-511 | DDD | |
| Timer (current Value) | ------ | T 0-4095 | DDDD | |
| Counter (Current Value) | ------ | C 0-4095 | DDDD | |
| Extension Data Memory(E0-E18) | ------ | E0-E18 0-32767 | DDDDD | |
| EM | | EM 0-32767 | DDDDD | |
| Index Register | ------ | IR 0-15 | DD | |
| Data Register | ------ | DR 0-15 | DD | |

## Cable Diagram

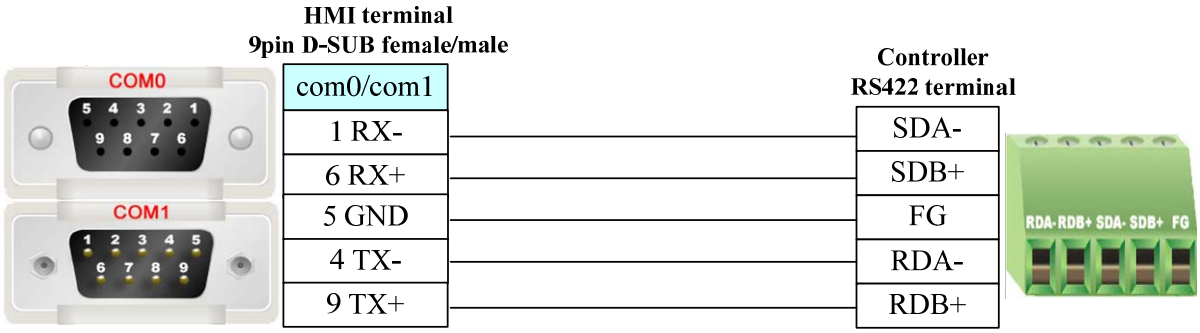
### Omron RS232 on the CPU unit



## Omron CJ\CS series Peripheral port on the CPU unit

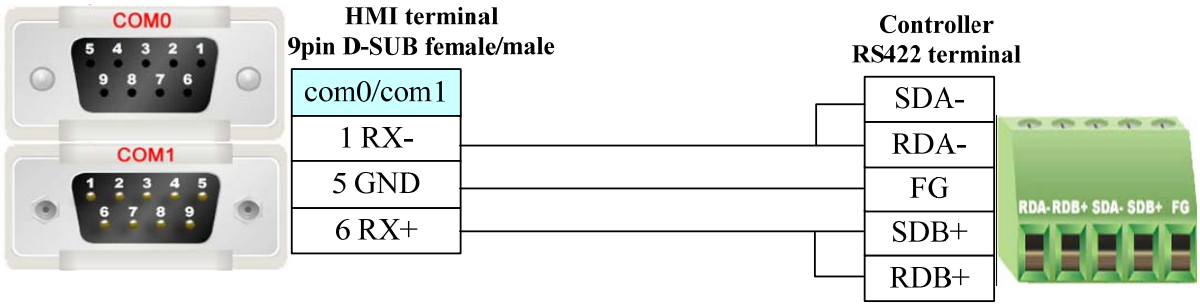
When connecting the peripheral port on the CPU by the conversion adapter, set DIP4 to on.

## Omron CP1H RS422 communication cable




**Note:** When connecting by the 4-wire method, set DIP1~6 to off. (The dip on the back of option board)

## Omron CP1H RS485 communication cable

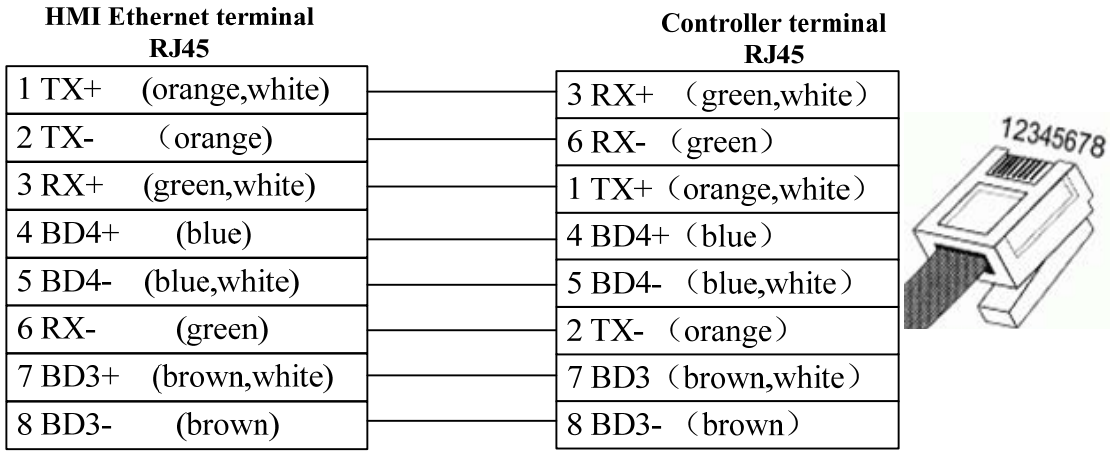



**Note:** When connecting by the 2-wire method, set DIP1 to off, DIP 2, 3, 5, 6 to on.

## Ethernet communication protocol cable

Cross-connection or crossover network cable can be used as communication cable via the hub or switch

a. Cross-connection cable diagram




b. crossover network cable diagram

| HMI Ethernet terminal RJ45 | | Ethernet Hub or Switch RJ45 |
|---|---|---|
| 1 TX+ | (orange,white) | 1 RX+（orange,white） |
| 2 TX- | （orange) | 2 RX- （orange） |
| 3 RX+ | (green,white) | 3 TX+ （green,white） |
| 4 BD4+ | (blue) | 4 BD4+ （blue） |
| 5 BD4- | (blue,white) | 5 BD4- （blue,white） |
| 6 RX- | (green) | 6 TX- （green） |
| 7 BD3+ | (brown,white) | 7 BD3（brown,white） |
| 8 BD3- | (brown) | 8 BD3- （brown） |

## 6.51 OMRON E5EZ-R3(Temperature Controller)

### Serial Communication

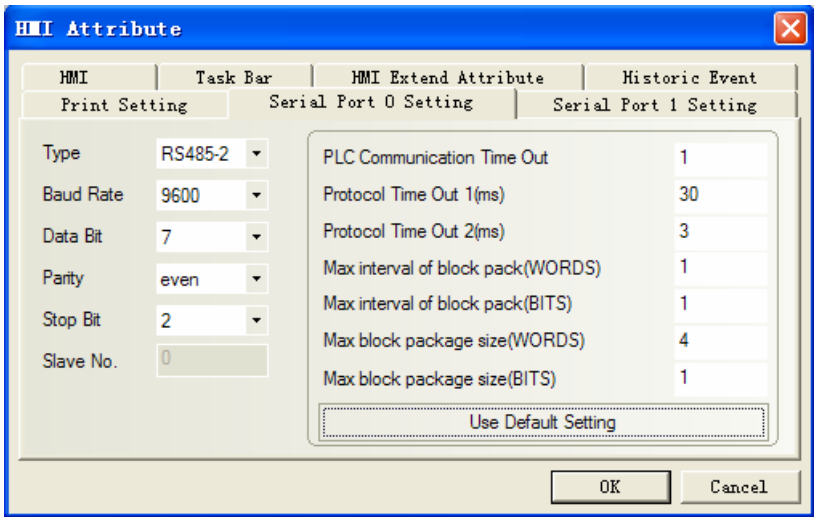
| Series | CPU | Link Module | Driver |
|---|---|---|---|
| OMRON E5EZ-R3 | E5EZ-R3 | RS485 on the CPU unit | OMRON E5EZ-R3 |

### System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| OMRON E5EZ-R3 | OMRON E5EZ-R3 | RS485 on the CPU unit | RS485-2 | Setting | Your owner cable |

### Communication Setting

**Default communication:** 9600, 7, even, 2; station: 0



# Supported Device

## OMRON E5EZ-R3

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Variable | ------ | 0.0 — 0.A (C0 read only)<br>1.0 — 1.2D (C1)<br>2.0 — 2.5B (C3) | DDD.HH | Main addr indicates variable type 0(C0),1(C1),2(C3) subaddress indicates address of variable type |
| Action Command | ------ | 0-8 | H | |
| State | 0-31 | ------ | DD | Show the bit value of 0001（state）in C0 |
| Abnormal Input | 0 | ------ | D | The 6th value of C0 0001(state) Abnormal Input |

## Action Command address and other informations

| Addr | command | content | Notes |
|---|---|---|---|
| 0 | Communication write | 00:OFF（disable）<br>01:ON （enable） | Before writing data, "Communication write" command is "01” ON (enable)", otherwise it writes disable |
| 1 | Run/Stop | 00：Run<br>01：Stop | |
| 2 | Multi-segment SP | 00：Setting value 0<br>01：Setting value 1<br>02：Setting value 2<br>03：Setting value 3 | Must set the value of variable(addr:3.1A )to 1(ON) for writing correctly, otherwise it can’t write-in. |
| 3 | AT execute/stop | 00：stop<br>01：AT execute | |
| 4 | write-in mode | 00：save<br>01：RAM | |
| 5 | RAM storage | 00 | |
| 6 | Soft reset | 00 | |
| 7 | Setting area1 shift | 00 | |
| 8 | Protection value shift | 00 | |

**Please refer to the communication protocol for details.**

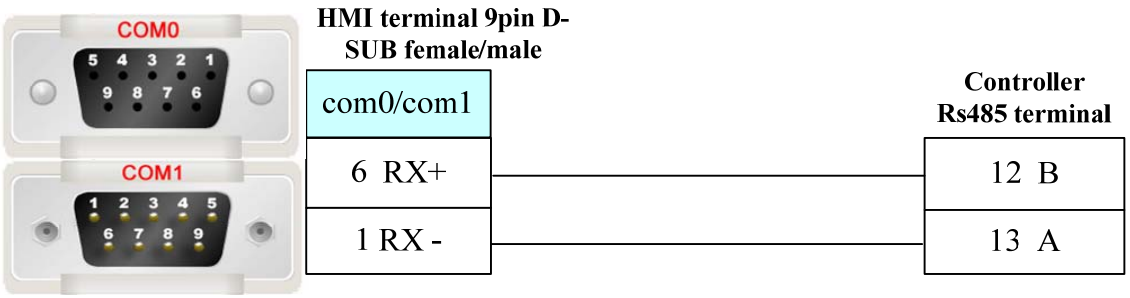
**H indicates hexadecimal**

**Note：**

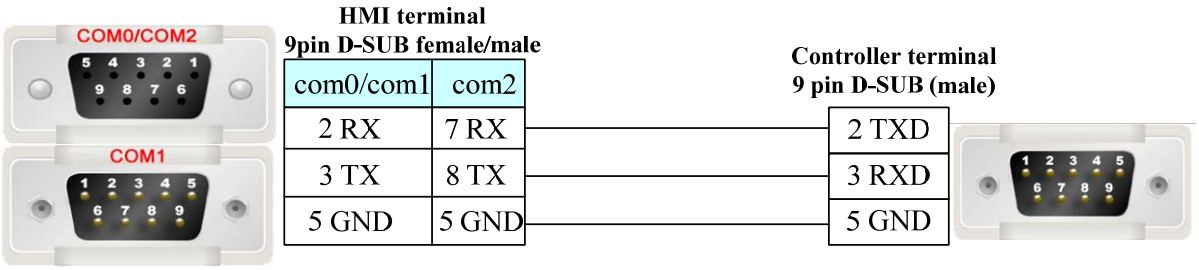
- Make sure the setting value be the same as the plc’s station No.
- Must be the same as the station No. of HMI
- Before writing data, "Communication write" command must is "01” ON (enable)", otherwise it writes disable

# Cable Diagram

## RS485-2 communication cable




**RS232 communication, need to use RS-232 to RS-422/485 converter**




## 6.52 OPTO 22

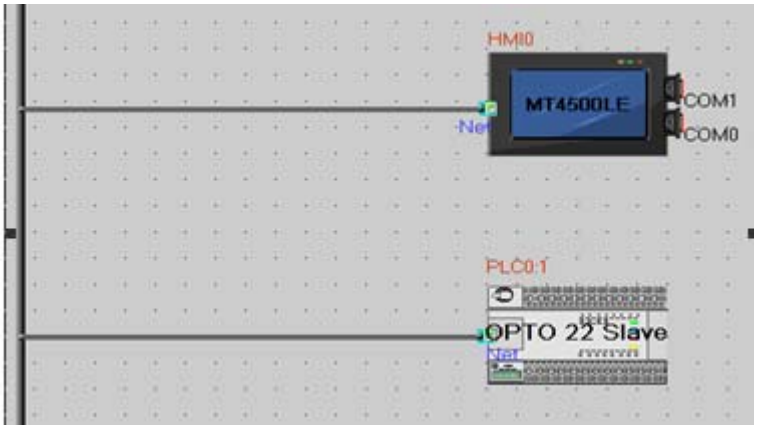
### **Ethernet Communication** (nonsupport Direct Online Simulation)

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| OPTO 22 | SNAP-UP1-ADS | Ethernet | OPTO 22 Slave |

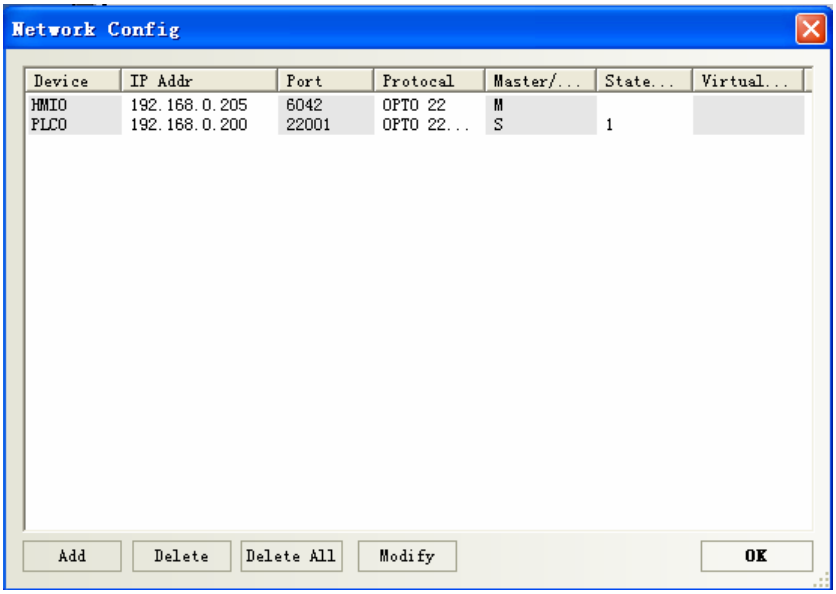
### System configuration

| Series | CPU | Link Module | Connect Type | Parameter | Cable |
|---|---|---|---|---|---|
| OPTO 22 | SNAP-UP1-ADS | Ethernet | Ethernet | Setting | Your owner cable |

### Communication Setting



## Network Configuration




## Supported Device

| Device | Bit Address | Word Address | Format |
|---|---|---|---|
| Bit Table | B0-65535 | —— | DDDDD |
| Bit Table | BT0.000-65535.255 | —— | DDDDD.DDD |
| Integer 32 | —— | N32 0-65535 | DDDDD |
| Float | —— | FN0-65535 | DDDDD |
| UP Timer | —— | UTN0-65535 | DDDDD |
| Down Timer | —— | DTN0-65535 | DDDDD |
| PID parameter | —— | PIDSN0.00-32.06 | DDDDD.DD |
| Integer 32 Table | —— | NT0.000-65535.255 | DDDDD.DDD |
| Float Table | —— | FT0.000-65535.255 | DDDDD.DDD |

## Editing Macro, please refer to the type table:

| Register | | Type |
|---|---|---|
| N32 | | Double |
| FN | | Float |
| DTN | | Float |
| UTN | | Float |
| PID | Input | Float |
| | SetPoint | Float |
| | Output | Float |
| | Gain | Float |
| | Tune I | Float |
| | Tune D | Float |
| | Mode | Double |
| IN | | BIT |

| | |
|---|---|
| QN | BIT |
| PIN | Float |
| PQN | Float |
| NT | Double |
| FT | Float |
| B | BIT(the attribute of B is the same as N32 in the PLC software) |
| BT | BIT(the attribute of BT is the same as NT in the PLC software) |

**Note：**

**1、 The configuration in OPTO 22 software must be the same as the configuration in Kinco HMIware software：**

true：e.g.: define Float in the OPTO 22 software，F**1**

Select FN device in the Kinco HMIware software, address: 1.

**Communicate correctly**

error：e.g.: define Float in the OPTO 22 software，F**0001**

Select FN device in the Kinco HMIware software, address: 1.

**Communicate error**

**2、 PIDSN correspondence**

If it set up PID1 in the OPTO 22 software, it can show the values of Input, SetPoint, Output, Gain, Tune I, Tune D, and Mode.

In the Ev5000 software, PIDSN format DDDDD.DD, Address can be written in **1.****.( the main address in front of decimal point corresponding to the OPTO 22 of PID1 1 ,sub-addr refer to the table. the table as follows:

| Sub Address（Example PID1，1 is sub address） | Corresponding Value |
|---|---|
| 1.00 | Input |
| 1.01 | SetPoint |
| 1.02 | Output |
| 1.03 | Gain |
| 1.04 | Tune I |
| 1.05 | Tune D |
| 1.06 | Mode |

# Cable Diagram

## Ethernet communication cable

Cross-connection or crossover network cable can be used as communication cable via the hub

a. Cross-connection cable

| HMI Ethernet terminal RJ45 | | Controller terminal RJ45 |
|---|---|---|
| 1 TX+ | (orange,white) | 3 RX+ （green,white） |
| 2 TX- | （orange) | 6 RX- （green） |
| 3 RX+ | (green,white) | 1 TX+（orange,white） |
| 4 BD4+ | (blue) | 4 BD4+（blue） |
| 5 BD4- | (blue,white) | 5 BD4- （blue,white） |
| 6 RX- | (green) | 2 TX- （orange） |
| 7 BD3+ | (brown,white) | 7 BD3（brown,white） |
| 8 BD3- | (brown) | 8 BD3- （brown） |

b. crossover network cable

| HMI Ethernet terminal RJ45 | | Ethernet Hub or Switch RJ45 |
|---|---|---|
| 1 TX+ | (orange,white) | 1 RX+（orange,white） |
| 2 TX- | （orange) | 2 RX- （orange） |
| 3 RX+ | (green,white) | 3 TX+ （green,white） |
| 4 BD4+ | (blue) | 4 BD4+ （blue） |
| 5 BD4- | (blue,white) | 5 BD4- （blue,white） |
| 6 RX- | (green) | 6 TX- （green） |
| 7 BD3+ | (brown,white) | 7 BD3（brown,white） |
| 8 BD3- | (brown) | 8 BD3- （brown） |

## 6.53 Parker Automation（Servo Controller）

### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| Parker Compax3 | Compax3 | RS232 on CPU unit | Parker Compax3 |
| | | RS485 on CPU unit | |
| Parker SLVD Series | SLVD 15NS | RS485 on the CPU unit | Parker SLVD Series |
| parker 6k | 6K4 | RS232 on the CPU unit | parker 6k |

### System configuration

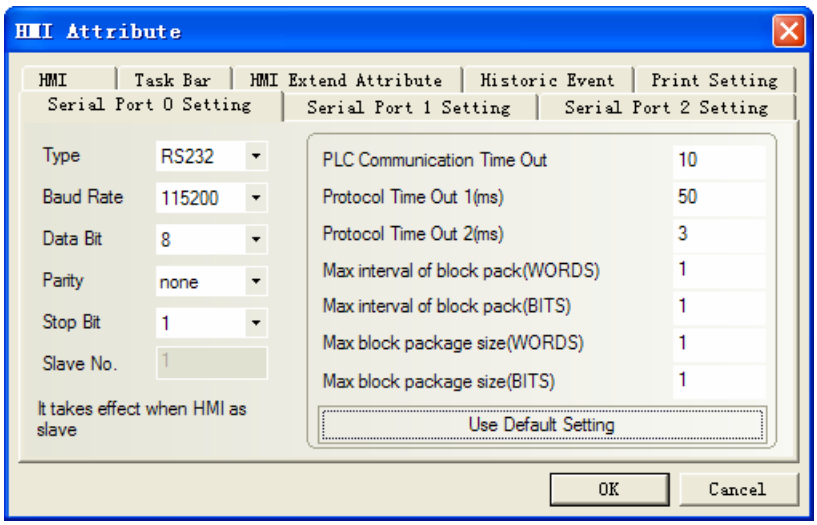
| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| Parker Compax3 | Parker Compax3 | RS232 on CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 on CPU unit | RS485-2 | Setting | Your owner cable |
| Parker SLVD Series | SLVD Series | RS485 on the CPU unit | RS485 | Setting | Your owner cable |
| parker 6k | 6K4 | RS232 on the CPU unit | RS232 | Setting | Your owner cable |

# Communication Setting

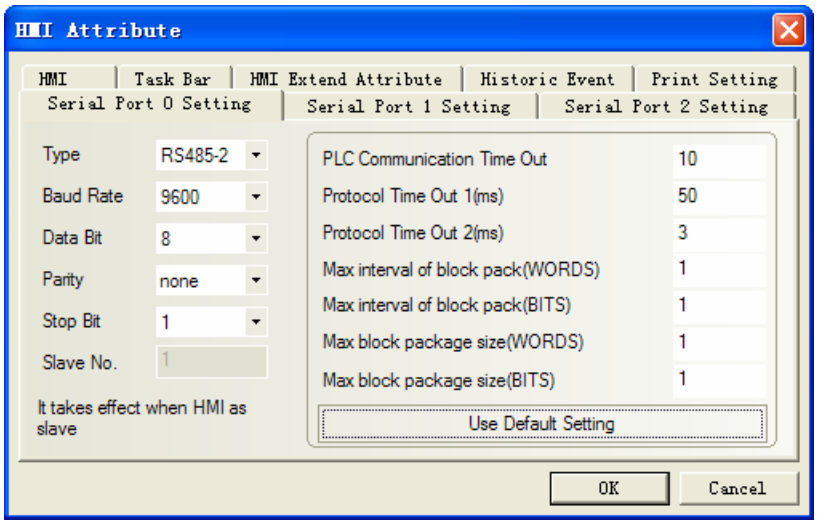
## HMI

### Compax3

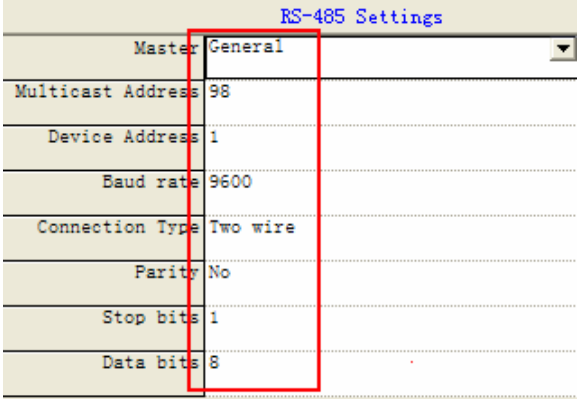
**RS232 default communication:** 115200, 8, none, 1; station: no address



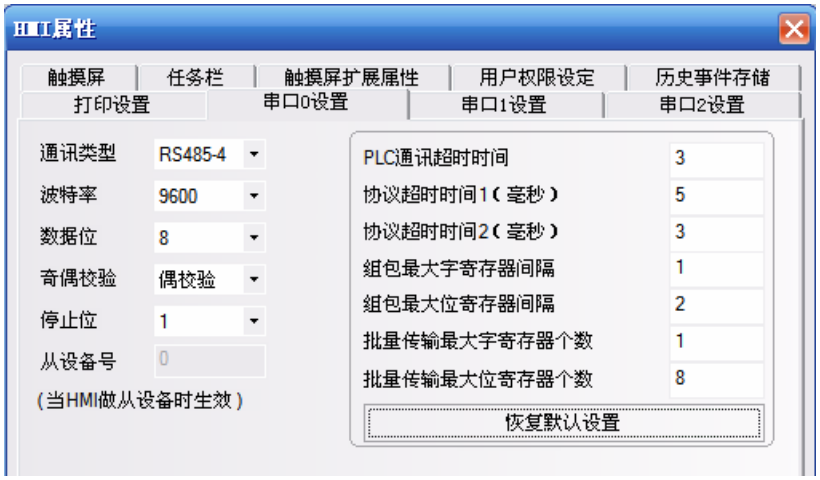

**RS485-2 default communication:** 9600, 8, none, 1; station: 1



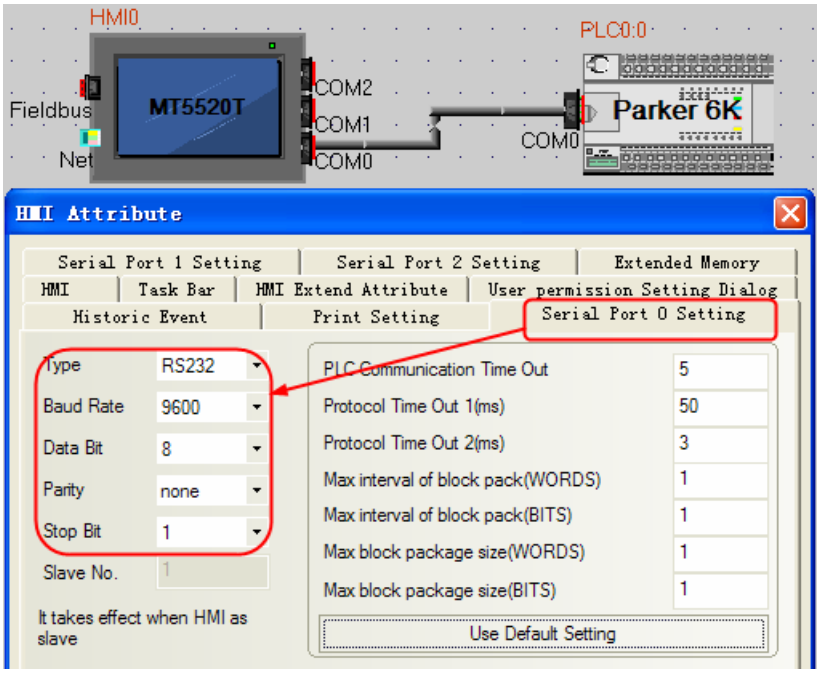

Note: RS-485 Settings can be made in the C3 Servo Manager under “RS485 settings”



**SLVD Series RS485 communciation:** 9600, 8, 1, even; station: 0




**6k RS232 default communication:** 9600, 8, 1, none; station: 0




注：不支持 485 通讯。

# Supported Device

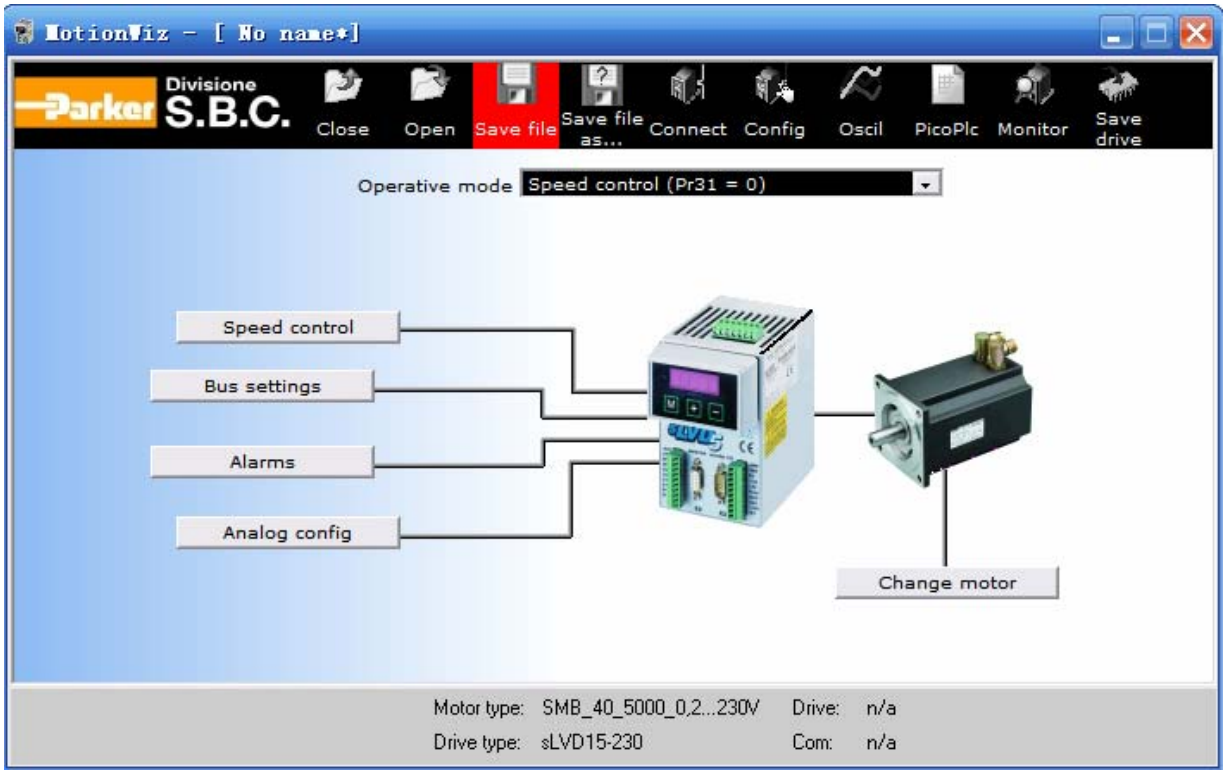
**Compax3**

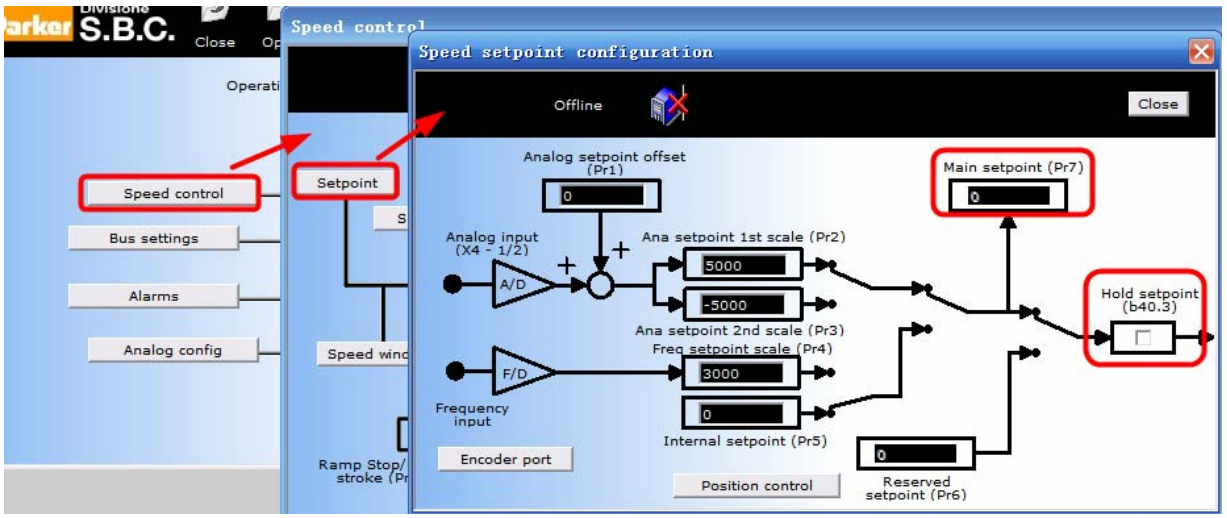
| Device | Bit Address | Word Address | Format |
|---|---|---|---|
| | R_Bit 0.0-9999999.31 | ------ | DDDDDDD.DD |
| | ------ | R_Float 0.0-9999.511 | DDDD.DDD |
| | ------ | R_Int 0.0-9999.511 | DDDD.DDD |

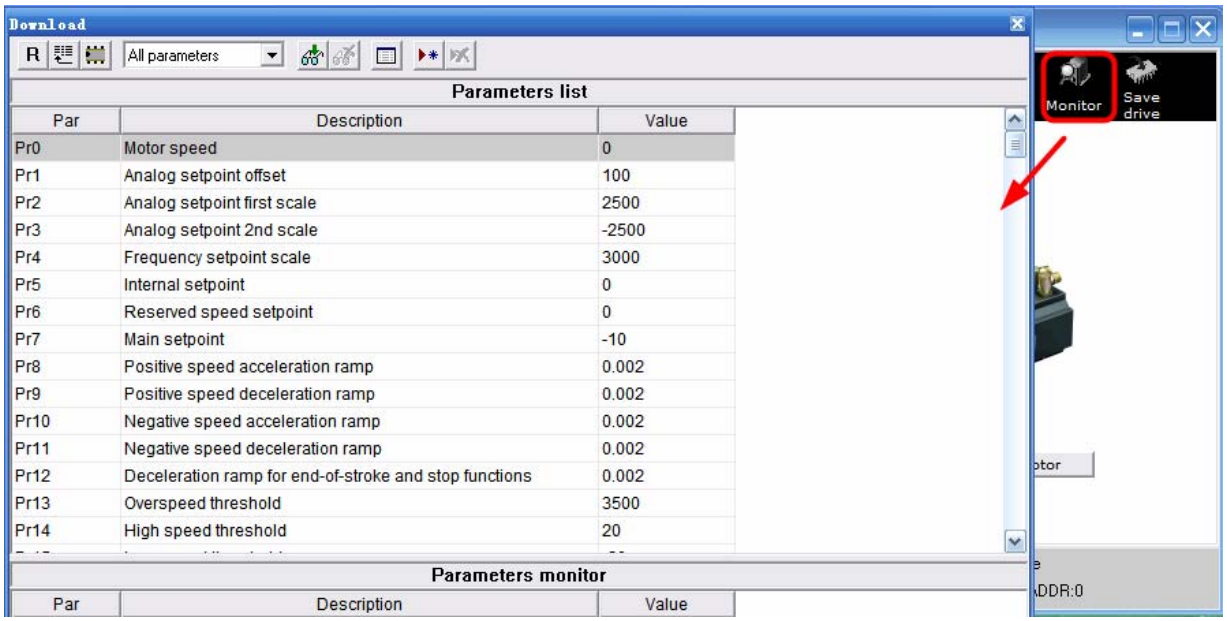
**Note:** R_Bit device is the bit format of R_Int device. The address of R_Bit device is DDDDDDD.DD, the first seven position indicate the address of R_Int, the last two positon indicate 32-bit

**SLVD Series**

| Device | Bit Address | Word Address | Format | Note |
|---|---|---|---|---|
| Pr_Bit | 0-9999.15 | ------ | DDDD.DD | |
| Pr_Byte | ------ | 0-9999 | DDDD | |
| Pr_Word | ------ | 0-9999 | DDDD | |
| Pr_DWord | ------ | 0-9999 | DDDD | |






**6k Series**

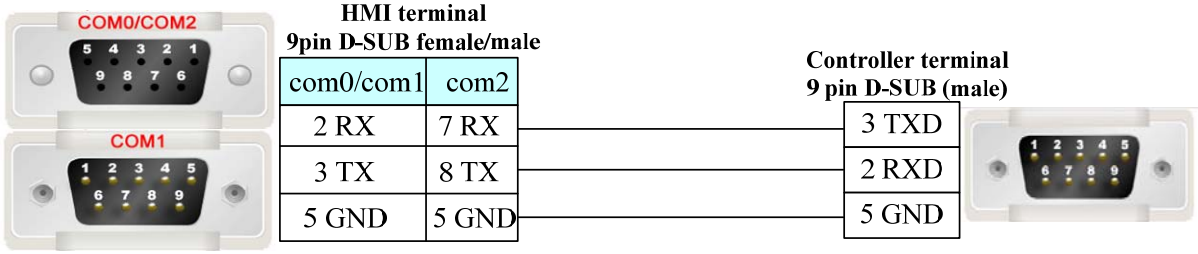
| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Bit in register | VARB_bit 1.00~125.31 | ------ | DDD | Read only |
| The real number value in register | ------ | VAR_float 1~225 | DDD | |
| The integer number value in register | ------ | VAR_int 1~225 | DDDD | |
| The 32-bit hexadecimal value in register | ------ | VARB 1~125 | DDD | Read only |

Note: VARB configuration software need to use hexadecimal data type, integer-bit to 8 bits.

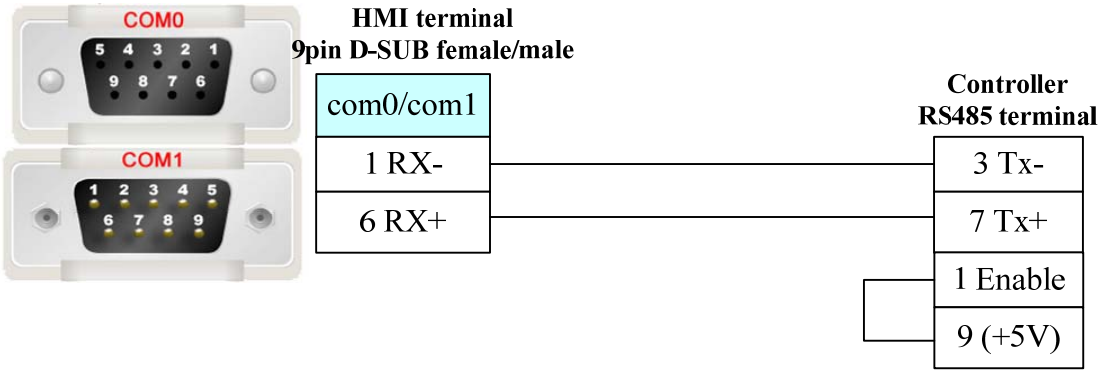
# Cable Diagram

**Compax3**

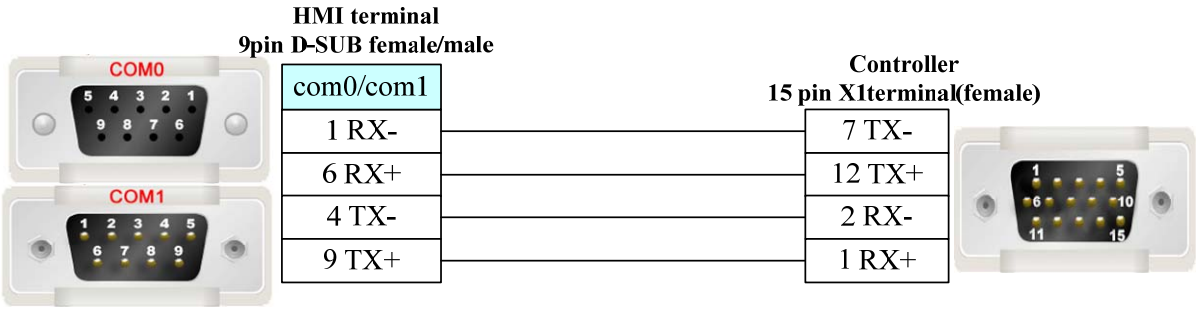
## RS232



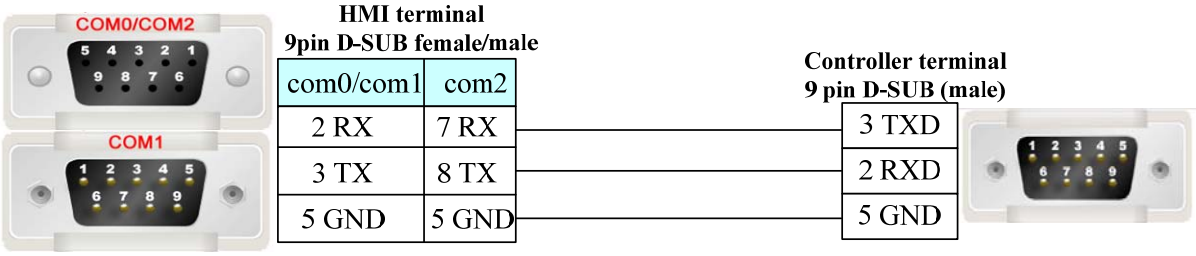

## RS485




**SLVD Series RS485-2**




**6k Series RS232**




## 6.54 PMAC Motion Controller

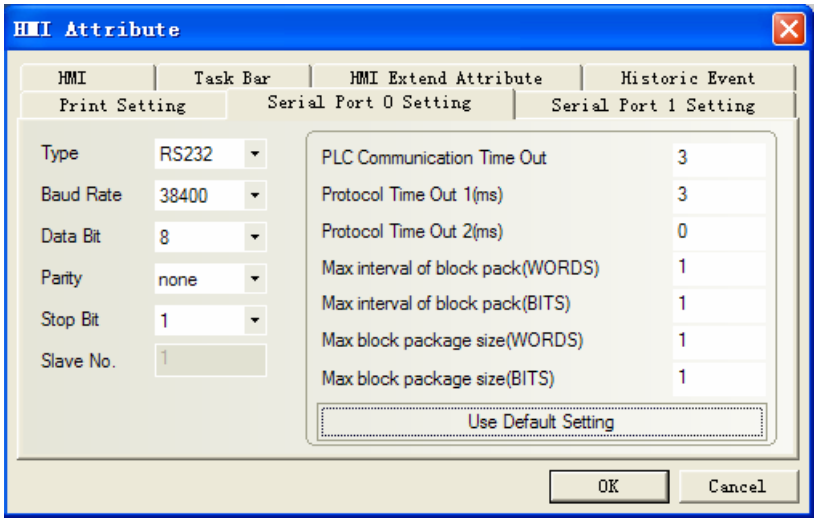
### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| PC/104 | PC/104 | RS232 on the CPU unit | PMAC series |

### System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| PC/104 | PC/104 | RS232 on the CPU unit | RS232 | Setting | Your owner cable |

## Communication Setting




## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| I variable | ------ | I 0-9999 | DDDD | R/W |
| M variable | ------ | M 0-9999 | DDDD | R/W |
| P variable | ------ | P 0-9999 | DDDD | R/W |
| Q variable | ------ | Q 0-9999 | DDDD | R/W |
| I variable Float | ------ | I_float 0-9999 | DDDD | R/W |
| P variable Float | ------ | P_float 0-9999 | DDDD | R/W |
| Q variable Float | ------ | Q_float 0-9999 | DDDD | R/W |
| report position of motor | ------ | POS 0 | D | R |
| report velocity of motor | ------ | VEL 0 | D | R |
| report following error of motor | ------ | FER 0 | D | R |
| common manual and programming command | ------ | ORD/JOG* 0-9999 | DDDD | W |
| Run current program | ------ | RUN 0-9999 | DDDD | W |
| Halt program | ------ | HLT 0-9999 | DDDD | W |

**Note：** Some addresses in I variable devices are on with hex number, when single float number on, all bits which can't be transformed into hex numbers will be "0"

### PMAC common manual commands

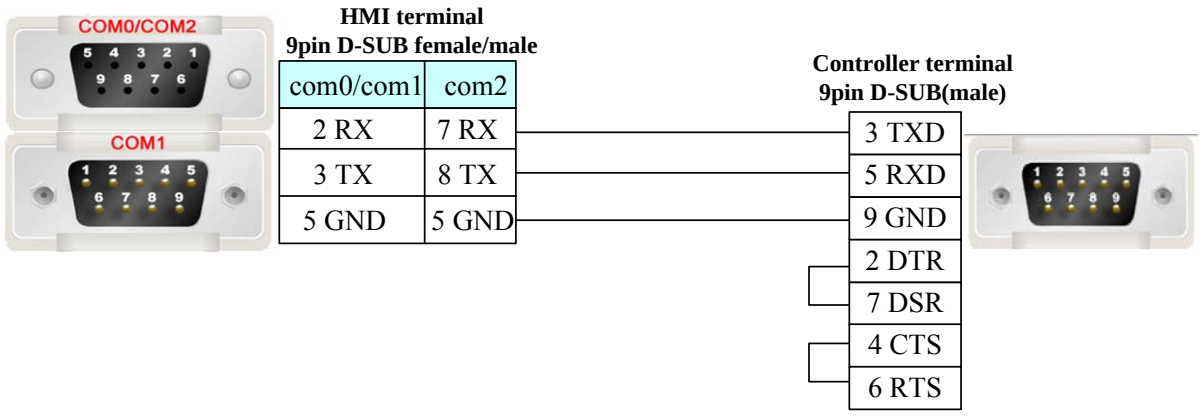
(0) ORD/JOG 0000： j+:： continual positive rotation command
(1) ORD/JOG 0010： j- ： continual reverse rotation command
(2) ORD/JOG 0020： j/ ： stop command
(3) ORD/JOG 0030： j=constant
(4) ORD/JOG 0040： j：constant
(5) ORD/JOG 0050： j ^

(6) ORD/JOG 0060： # n
(7) ORD/JOG 0070： home（hm）：manual reset zero commands
(8) ORD/JOG 0080： homez（hmz）：manual reset zero position commands

### PMAC common programming commands

(0) ORD/JOG 0100：& n
(1) ORD/JOG 0110：B m R
(2) ORD/JOG 0120：B m S
(3) ORD/JOG 0130：A（ctrl A）：Stop movement program
(4) ORD/JOG 0140：K（ctrl K）：Stop movement program and close enable signal
(5) ORD/JOG 0150： Enable PLC n：Enable PLC, n indicates prog no. of PLC, range 0-31
(6) ORD/JOG 0160： Disable PLC n：Disable PLC, n indicates prog no. of PLC, range 0-31

## Cable Diagram




# 6.55 Power-one AURORA Wind Inverter

## Serial Communication

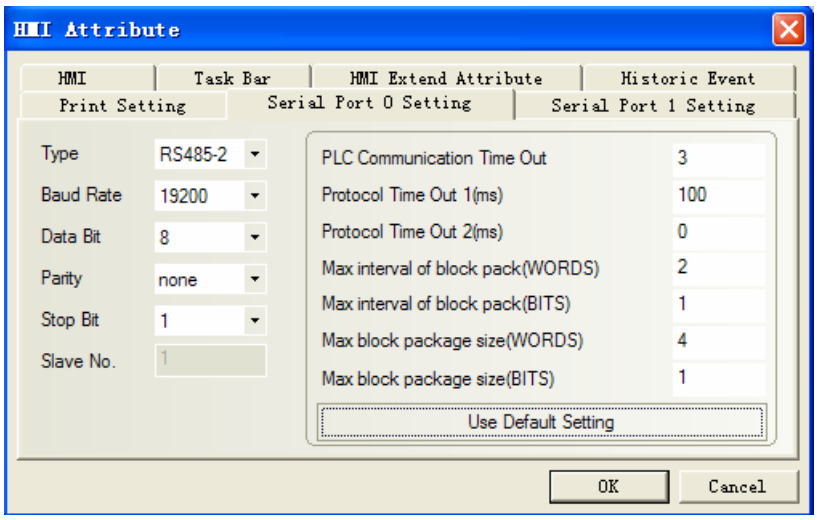
| Series | CPU | Link Module | Driver |
|---|---|---|---|
| AURORA | PVI-6000-OUTD-US-W | RS485 on the port | Aurora PV |

## System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| AURORA | PVI-6000-OUTD-US-W | RS485 on the port | RS485 | Setting | Your owner cable |

## Communication Setting

**Default communication:** 19200, 8, none, 1; station: 2



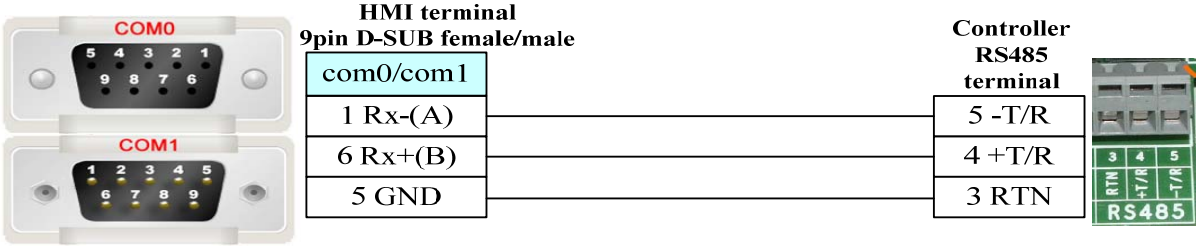

## Supported Device

| Device | Bit Address | Word Address | Format |
|---|---|---|---|
| Time Register（double word） | ------ | Time 0-9999.7 | DDDDD.0 |
| Energy Register（double word） | ------ | Energy 0-9999.7 | DDDDD.0 |
| Status variable Register（double word） | ------ | Measure 0-9999.7 | DDDDD.0 |
| Hardware version（double word） | ------ | Fireware 0-9999.7 | DDDDD.0 |
| Software version（double word） | ------ | Version 0-9999 | DDDD |
| Device sequence No.（double word） | ------ | SN 0-9999 | DDDD |
| Device ID（double word） | ------ | PN 0-9999 | DDDD |
| Device work status | ------ | State 0-9999 | DDDD |

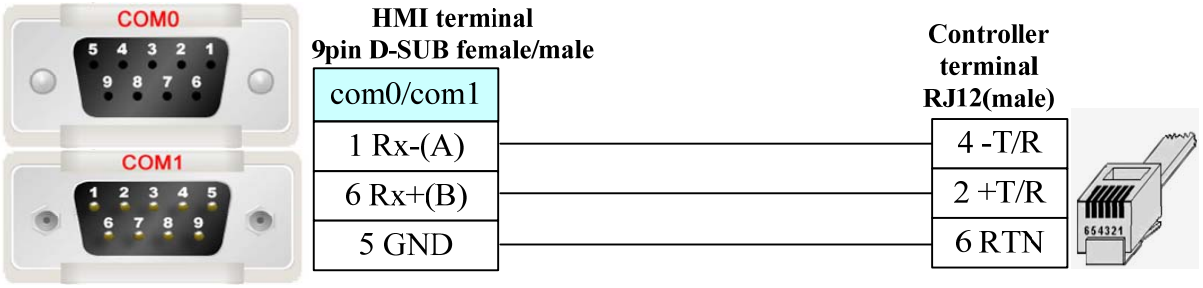
## Cable Diagram

**Note:** AURORA Wind Inverter supports two connection modes, please refer to the manual of power-one Corporation for details.

1. Connect with RS485 port




2. Connect with RJ12




# 6.56 Profibus Slave

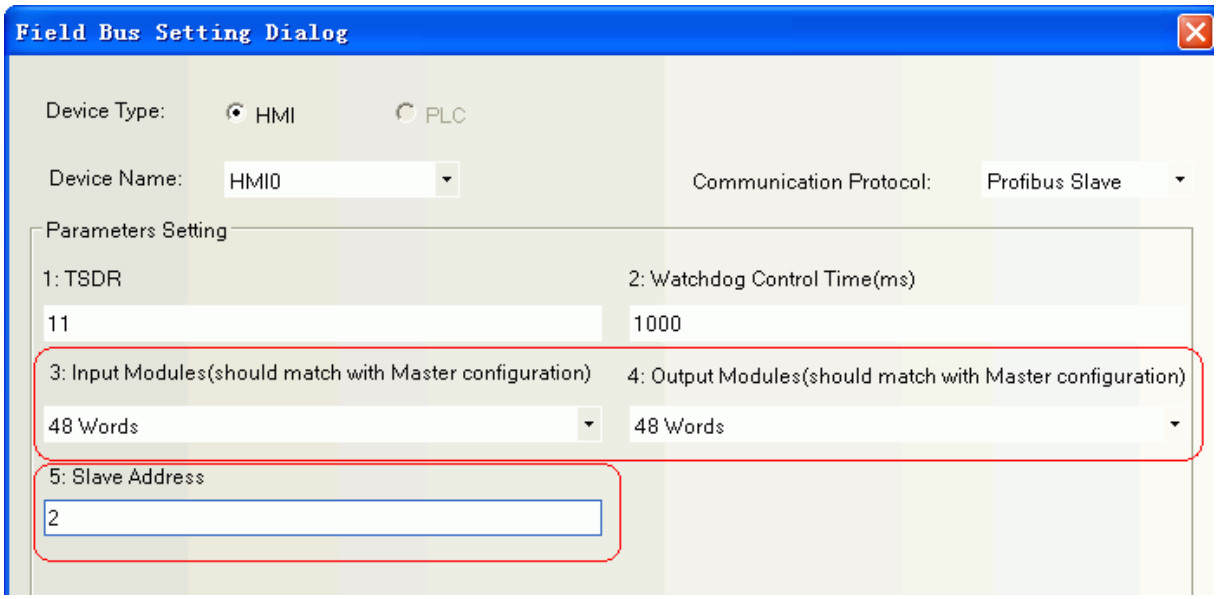
## Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| SIMATIC S7-300/400 | ALL CPUs that have the DP port | PROFIBUS DP port on the External Device | Profibus Slave |
| Other company devices which support PROFIBUS DP Master | | PROFIBUS DP port | |

## System configuration

| Series | CPU | Link Module | Parameter | SIP Type |
|---|---|---|---|---|
| SIMATIC S7-300/400 | ALL CPUs that have the DP port | PROFIBUS DP port on the External Device | Setting | Profibus |
| Other company devices which support PROFIBUS DP Master | | PROFIBUS DP port | Setting | |

## Communication Setting



**Note：** Input and Output Modules should match with Master configuration

## PLC setting

**Note:** you can find eview.gsd in the fieldbus file of Kinco HMIware Installation Directory, or you can download from www.kinco.cn.

**1. Setup eview.gsd file**

Setup GSD file in the s7-300 software.

**Process:**

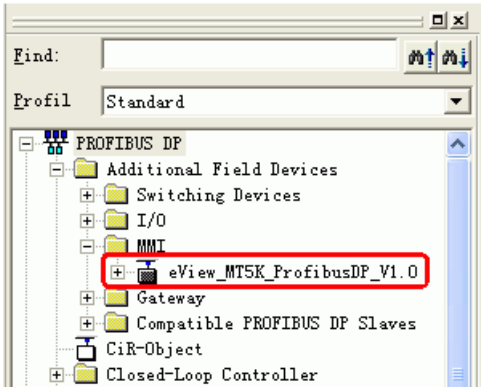
（1）. Closed all the station in HW Config

（2）.choose “option” > “install GSD file”.

（3）.Find out the folder of eview.gsd.

（4）.Choose eview.gsd, and then click the install button.

You can find the ico in PROFIBUS DP\MMI, after installing

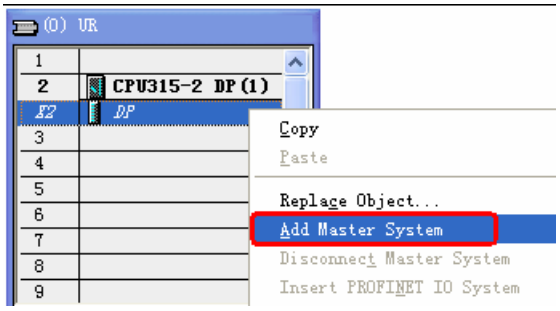


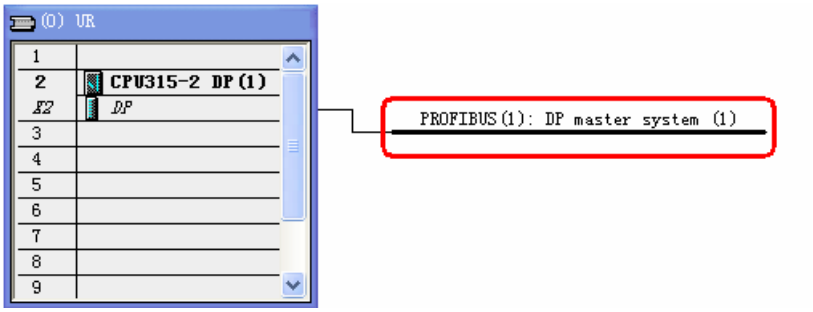

**2.** configuration setting

（1）make a new project in s7-300 through the guide

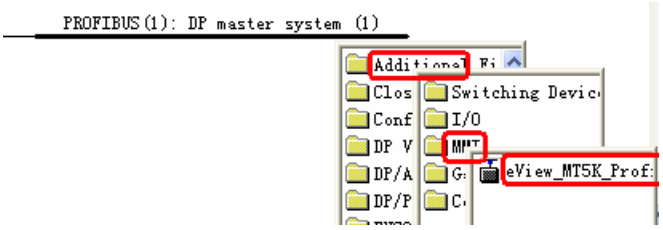
(2)we must use OB82，OB86，OB100，OB121 and OB122 in BLOCK, or system will go wrong when PLC is power-up.

（3）dblclick HW Config, choose “DP” and right click “add master station”.

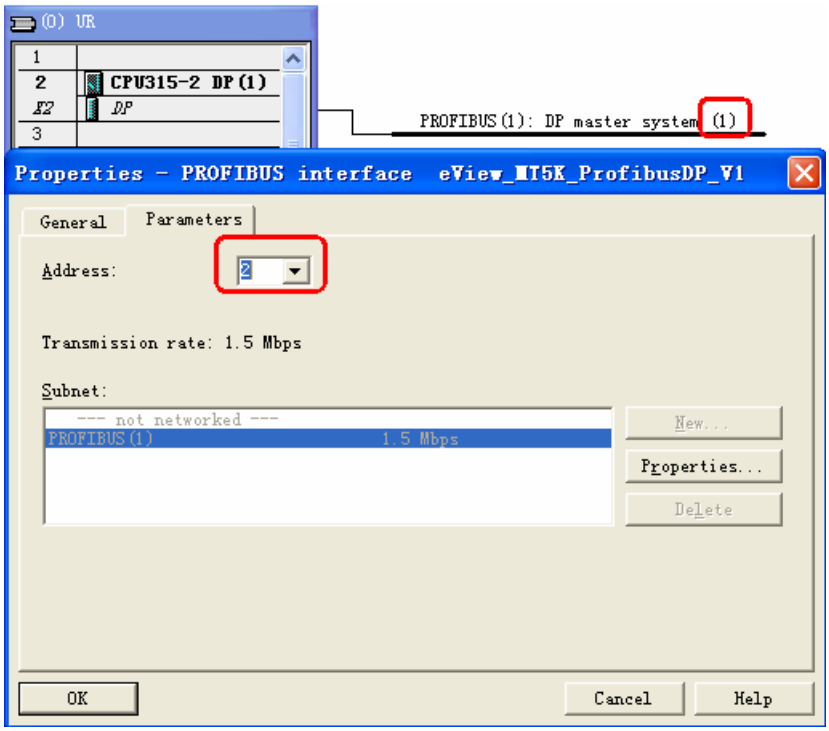


（4）right click，choose “insert object”

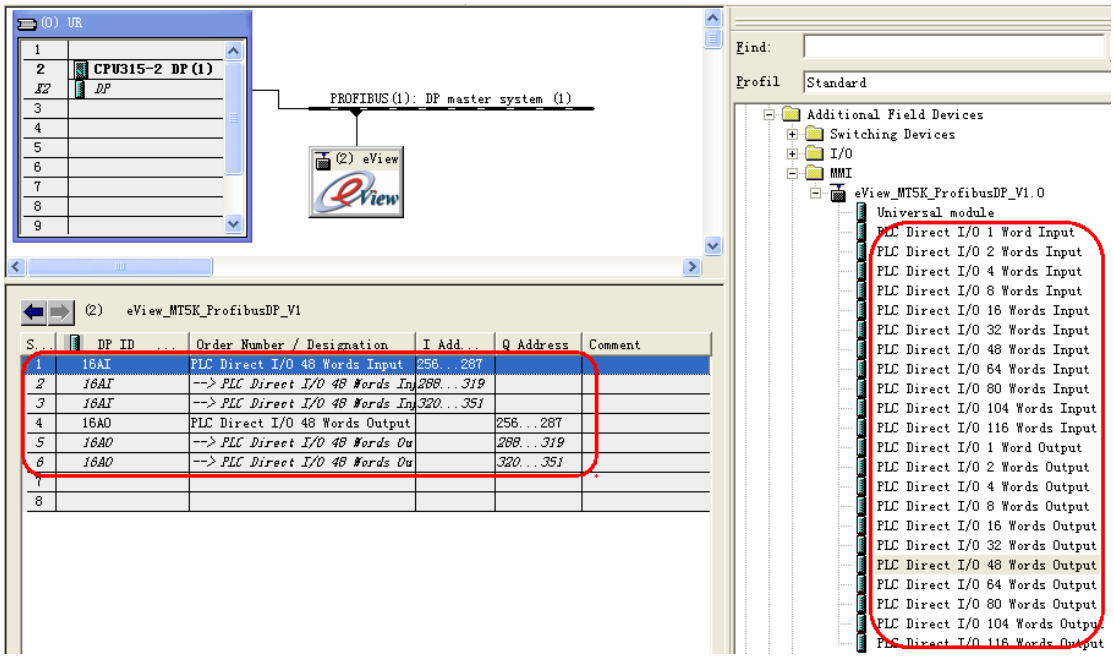



Click “eview_MT5K_ProfibusDP_V1.0”，set address.

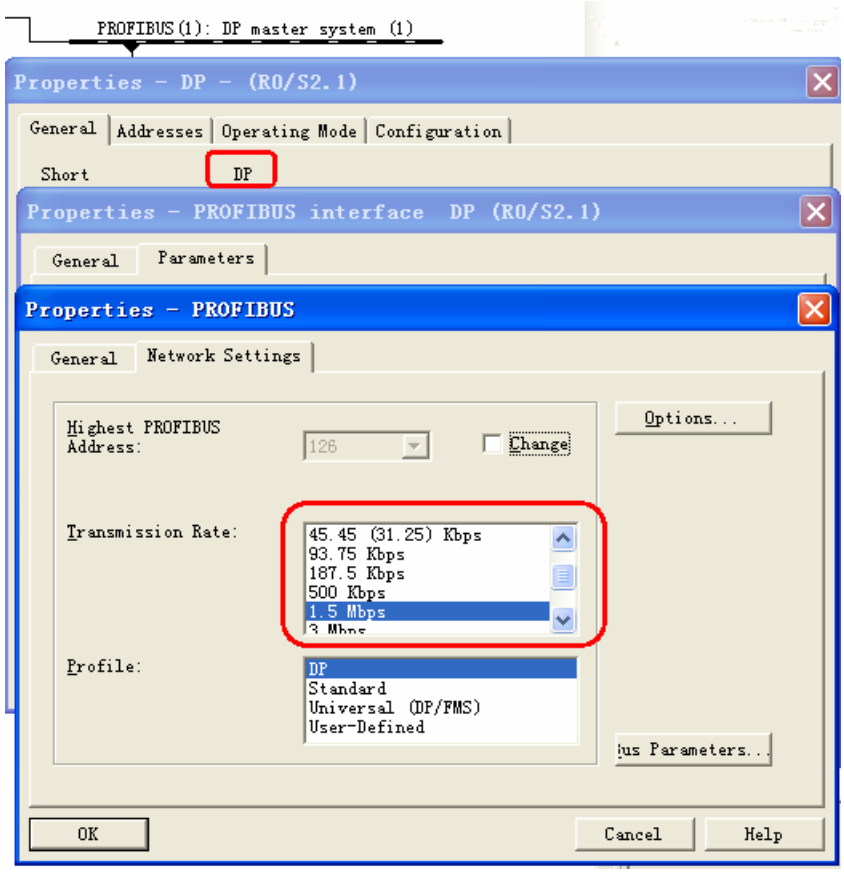



**Note:** the address No. of DP master station and slave can not be same.

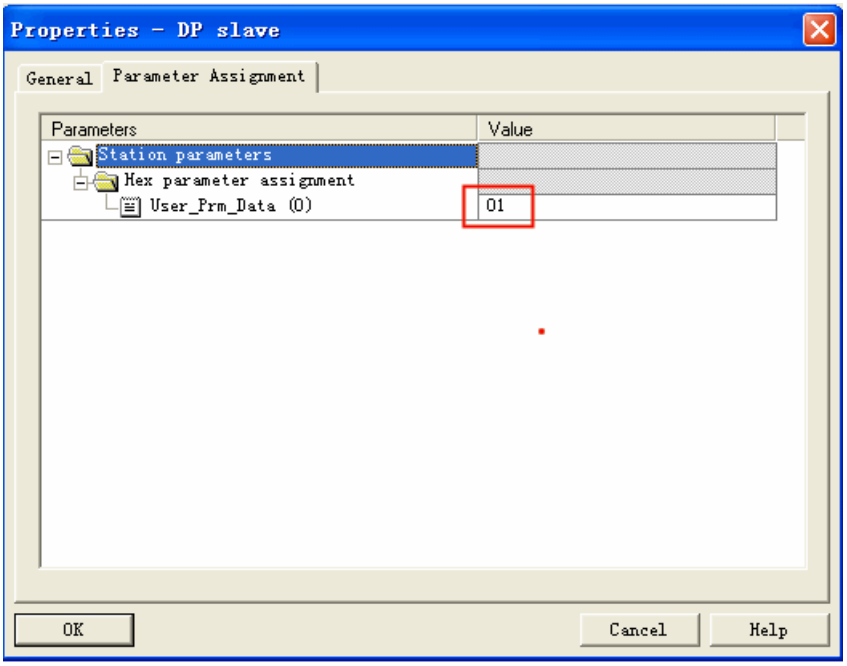
（5）input and output setting


(0) UR
CPU315-2 DP(1)
DP
PROFIBUS(1): DP master system (1)
(2) eView
(2) eView_MT5K_ProfibusDP_V1
DP ID
Order Number / Designation
I Add...
Q Address
Comment
16AI PLC Direct I/O 48 Words Input 256...287
16AO PLC Direct I/O 48 Words Output 256...287
Find:
Profil
Standard
Additional Field Devices
Switching Devices
I/O
MMI
eView_MT5K_ProfibusDP_V1.0
Universal module
PLC Direct I/O 1 Word Input
PLC Direct I/O 2 Words Input
PLC Direct I/O 4 Words Input
PLC Direct I/O 8 Words Input
PLC Direct I/O 16 Words Input
PLC Direct I/O 32 Words Input
PLC Direct I/O 48 Words Input
PLC Direct I/O 64 Words Input
PLC Direct I/O 80 Words Input
PLC Direct I/O 104 Words Input
PLC Direct I/O 116 Words Input
PLC Direct I/O 1 Word Output
PLC Direct I/O 2 Words Output
PLC Direct I/O 4 Words Output
PLC Direct I/O 8 Words Output
PLC Direct I/O 16 Words Output
PLC Direct I/O 32 Words Output
PLC Direct I/O 48 Words Output
PLC Direct I/O 64 Words Output
PLC Direct I/O 80 Words Output
PLC Direct I/O 104 Words Output

（6）Profibus DP Slave has adaption function，you can change the transmission rate of DP master station, maximum is 12Mbps.




(7) Double click slave ico, then set User_Prm_Data (0) =01




## Supported Device

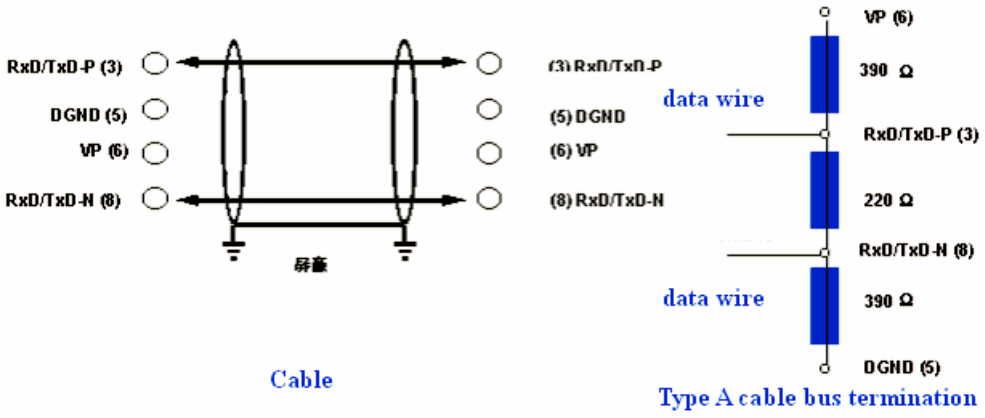
| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Direct I/O Input | LW.B8500.0~8615.F | ———— | DDDD.H | |
| Direct I/O Output | LW.B8000.0~8115.F | ———— | DDDD.H | |
| Direct I/O Input | ———— | LW8500~8615 | DDDD | correspond PIW |
| Direct I/O Output | ———— | LW8000~8115 | DDDD | correspond PQW |
| Direct I/O Input | ———— | LW8500~8615(Data width is dword) | DDDD | correspond PID |
| Direct I/O Output | ———— | LW8000~8115(Data width is dword) | DDDD | correspond PQD |

**Note:** When use either PID or PQD, you must set User_Prm_Data (0) =1 if HMI communication with the DP port of Siemens; Other company devices which support PROFIBUS DP Master, default User_Prm_Data (0) =0.

## Cable Diagram

### A-type violet cable




# 6.57 RF-IC (Card Reader)

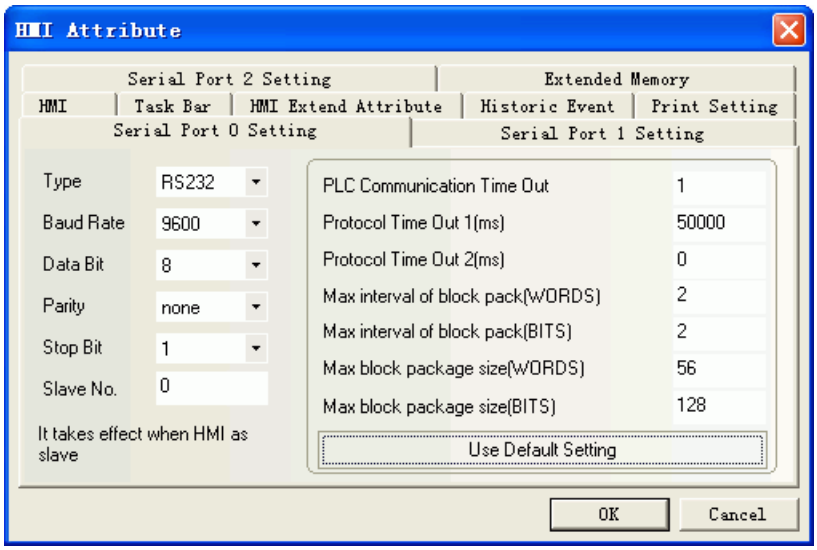
## Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| RF-IC | RF-IC | RS232 on the CPU unit | RF-IC |

## System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| RF-IC | RF-IC | RS232 on the CPU unit | RS232 | Setting | Your owner cable |

## Communication Setting

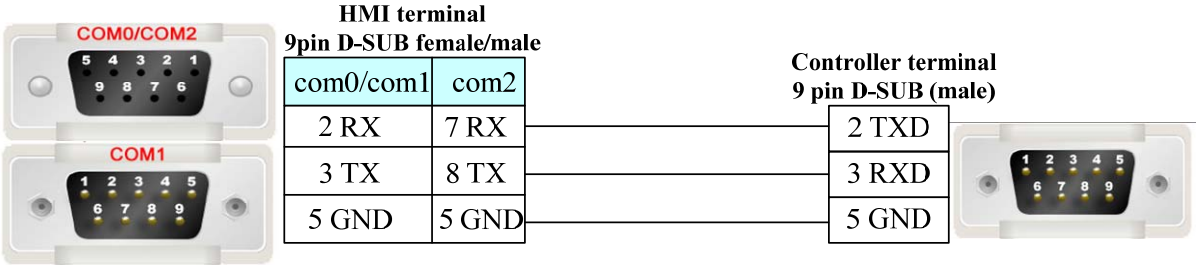



## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Bit | LB 8999 | ------ | DDDD | |
| | ------ | LW 8900 | DDDD | |

**Note:** LB8999 means bar code has received or not. 1 means data has received.

## Cable Diagram




# 6.58 RKC Instrument INC.

## Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| RKC CH | CH402WK02-VV*AN-5N | CPU direct | RKC CH402 |

## System configuration

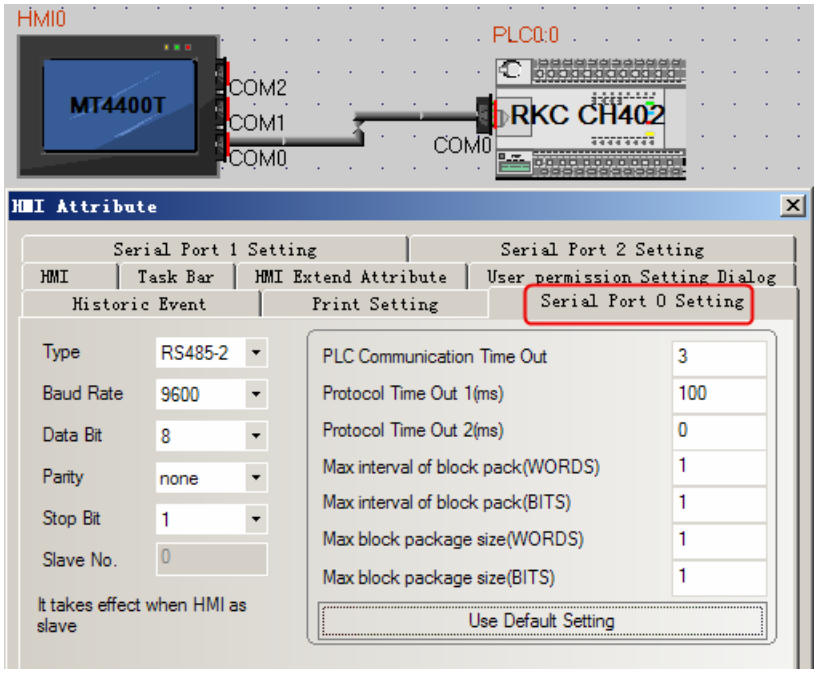
| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| RKC CH | CH402WK02-VV*AN-5N | RS485 the CPU unit | RS485 | Setting | Your owner cable |

# Communication Setting

## HMI

Default communication: 9600, 8, none, 1; station: 1

RS485




## Controller setting

Press “SET” key and “ < R/S” key at one time,then press the SET key and select parameters:

| | |
|---|---|
| Add | Address *1 |
| bPS | Baudrate *2 |
| bIT | data instruction *3 |
| InT | transmission delay *4 |

*1: Two bits ASCII code. Example 23, instrument number must 23(32H 33H)

*2: Baudrate controlled by code as below; default value: 2

0：2400 bps

1：4800 bps

2：9600 bps

3：19200 bps

*3: data instruction controlled by code as below; default value: 0

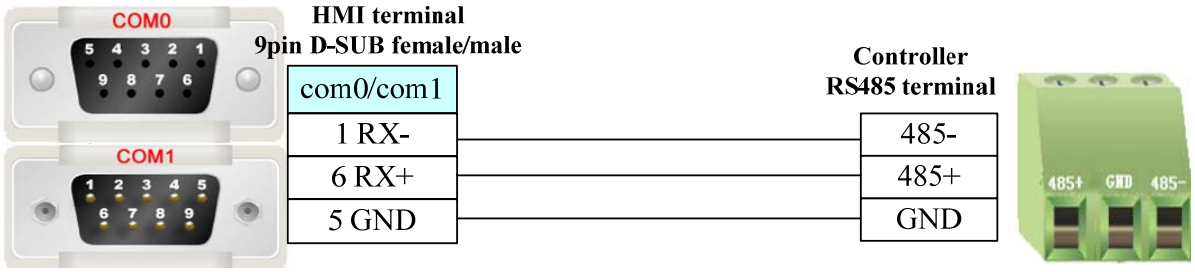
| ID | Data bit | parity | stop bit |
|---|---|---|---|
| 0 | 8 | none | 1 |
| 1 | 8 | none | 2 |
| 2 | 7 | odd | 1 |
| 3 | 7 | odd | 2 |
| 4 | 7 | even | 1 |
| 5 | 7 | even | 2 |

## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Alarm 1 status | AA: 0 | ------ | D | Read only |
| Burnout | B1: 0 | ------ | D | Read only |
| PID control/Autotuning | G1: 0 | ------ | D | R/W |
| Alarm 2 status | AB: 0 | ------ | D | Read only |
| RUN/STOP transfer | SR: 0 | ------ | D | R/W |
| Self-tuning | G2:0 | ------ | D | R/W |
| Measured value | ------ | M1: 0 | D | Read only |
| Current transfomer input1 | ------ | M2: 0 | D | Read only |
| Current transfomer input2 | ------ | M3: 0 | D | Read only |
| Error code | ------ | ER: 0 | D | Read only |
| Set value(SV1) | ------ | S1: 0 | D | R/W |
| Alarm 1 setting | ------ | A1: 0 | D | R/W |
| Alarm 2 setting | ------ | A2: 0 | D | R/W |
| Heater break alarm 1 setting | ------ | A3: 0 | D | R/W |
| Heater break alarm 2 setting | ------ | A4: 0 | D | R/W |
| Control loop break alarm | ------ | A5: 0 | D | R/W |
| Heat-side proportional band | ------ | P1: 0 | D | R/W |
| Integral time | ------ | I1: 0 | D | R/W |
| Derivative time | ------ | D1: 0 | D | R/W |
| Anti-reset windup | ------ | W1: 0 | D | R/W |
| Cool-side proportional band | ------ | P2: 0 | D | R/W |
| Overlap/deadband | ------ | V1: 0 | D | R/W |
| Heat-side proportioning cycle | ------ | T0: 0 | D | R/W |
| Cool-side proportioning cycle | ------ | T1: 0 | D | R/W |
| PV bias | ------ | PB: 0 | D | R/W |
| Set data lock function | ------ | LK: 0 | D | R/W |

## Cable Diagram

**RS485**



# 6.59 SAE J1939

## Serial Communication

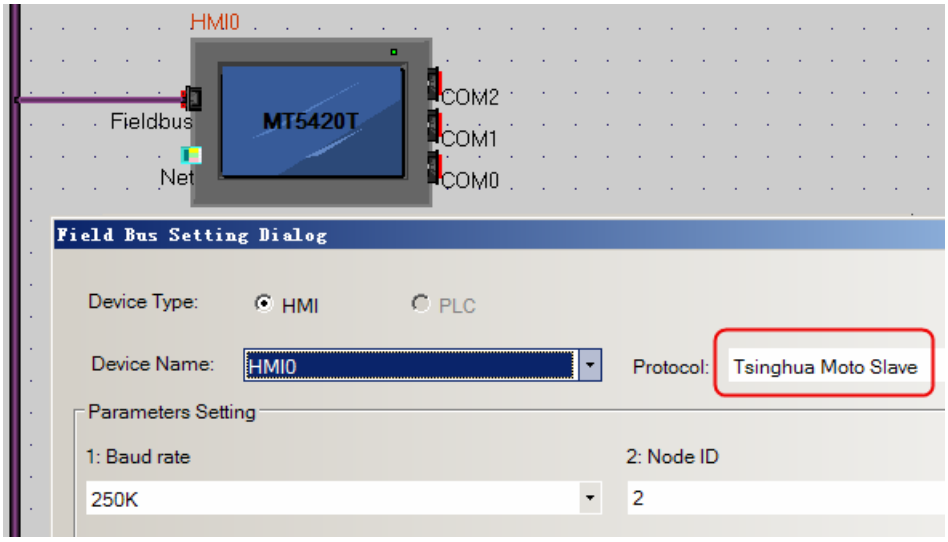
| Series | CPU | Link Module | Driver |
|---|---|---|---|
| Tsinghua Moto | Tsinghua Moto | CAN port | SAE J1939 slave |

## Systems Configuration

| Series | CPU | Link Module | Parameter | Cable |
|---|---|---|---|---|
| Tsinghua Moto | Tsinghua Moto | CAN port | Setting | Your owner cable |

## Communication Setting

HMI




## Supported Device

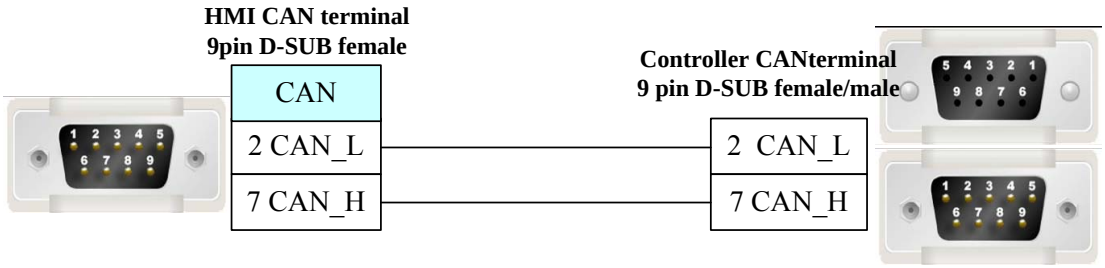
| Device | Bit Address | Word Address | Format |
|---|---|---|---|
| Throttle potentiometer | ———— | LW8000 | DDDD |
| Driving range expectations | ———— | LW8001 | DDDD |
| speed | ———— | LW8002 | DDDD |
| Trouble message | ———— | LW8003 | DDDD |
| Generator work mode | ———— | LW8004 | DDDD |
| Vehicle controller LIFE | ———— | LW8005 | DDDD |
| Vehicle controller status | ———— | LW8006 | DDDD |
| Generator speed | ———— | LW8010 | DDDD |
| The actual output current motor controller | ———— | LW8011 | DDDD |
| Generator temperature | ———— | LW8012 | DDDD |
| Generator controller temperature | ———— | LW8013 | DDDD |
| Motor controller LIFE | ———— | LW8014 | DDDD |

| | | | |
|---|---|---|---|
| Motor controller status | ———— | LW8015 | DDDD |
| Bus voltage | ———— | LW8020 | DDDD |
| Battery charge / discharge current | ———— | LW8021 | DDDD |
| SOC | ———— | LW8022 | DDDD |
| SOC alarm signal | ———— | LW8023 | DDDD |
| Battery Management System LIFE | ———— | LW8024 | DDDD |
| battery status | ———— | LW8025 | DDDD |
| The maximum value of the single voltage | ———— | LW8030 | DDDD |
| The maximum number single voltage | ———— | LW8031 | DDDD |
| Single voltage minimum value | ———— | LW8032 | DDDD |
| Single voltage minimum number | ———— | LW8033 | DDDD |
| The maximum temperature of the battery module | ———— | LW8034 | DDDD |
| ACDC input voltage | ———— | LW8040 | DDDD |
| ACDC output voltage | ———— | LW8041 | DDDD |
| ACDC temperature | ———— | LW8042 | DDDD |
| ACDC LIFE | ———— | LW8043 | DDDD |
| Engine ACDC start status | ———— | LW8044 | DDDD |

The definition of data format conversion

| Data type | Scale factor | Range | Offset | Median |
|---|---|---|---|---|
| Single voltage | 16mv/bit | 0 to 4.1 | 0 | 8 bit |
| Bus voltage | 0.5v/bit | 0 to 524 | 0 | 10 bit |
| Battery current | 1 A/bit | -500 to 524 | -500 | 10 bit |
| Motor current | 1 A/bit | 0 to 1024 | 0 | 10 bit |
| Throttle potentiometer | 5 mv/bit | 0 to 5.12 | 0 | 10 bit |
| Motor torque | 1 Nm/bit | 0 to 1024 | 0 | 10 bit |
| Speed | 5 RPM/bit | 0 to 5120 | 0 | 10 bit |
| All temperature | 1 ℃/bit | -40 to 210 | -40 | 8 bit |
| Percentage（SOC） | 0.5 %/bit | 0 to 128% | 0 | 8 bit |

# Cable Diagram



## 6.60 Saia-Burgess

### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| PCS | PCS1.C8 | RS232 on the CPU unit | Saia SBus |
| PCD | PCD2.M110<br>PCD2.M120<br>PCD2.M150<br>PCD2.M170<br>PCD2.M480 | RS232 on the CPU unit | |

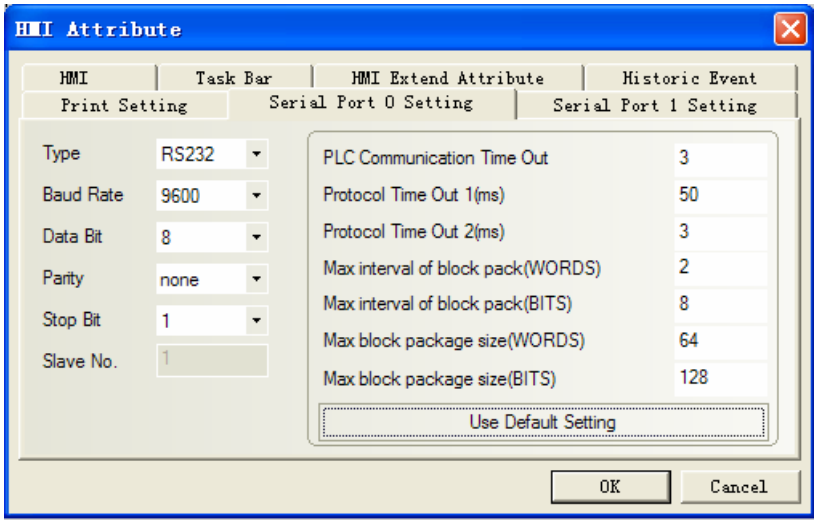
### Systems Configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| PCS | PCS1.C8 | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 on the CPU unit | RS485-4 | Setting | Your owner cable |
| PCD | PCD2.M110 | RS232 on the CPU unit | RS232 | Setting | Your owner cable |

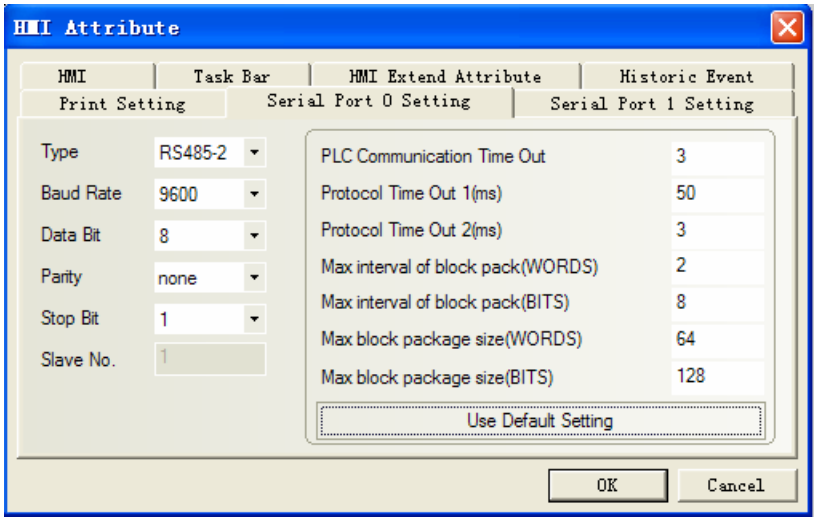
### Communication Setting

**Saia default communication:** 9600, 8, none, 1; station: 80

**RS232**




**RS485**

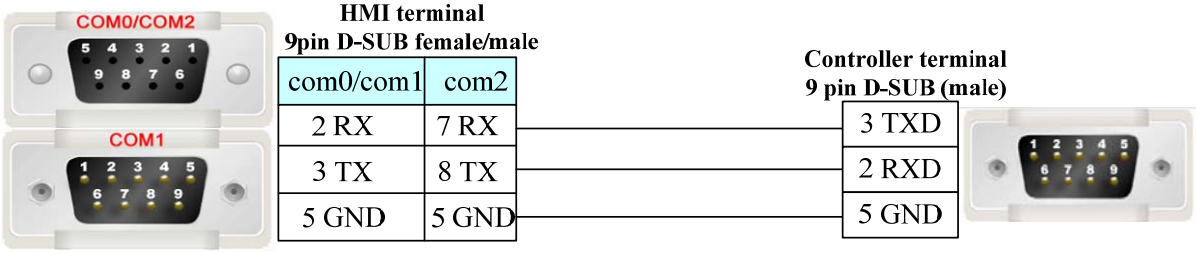



## Supported Device

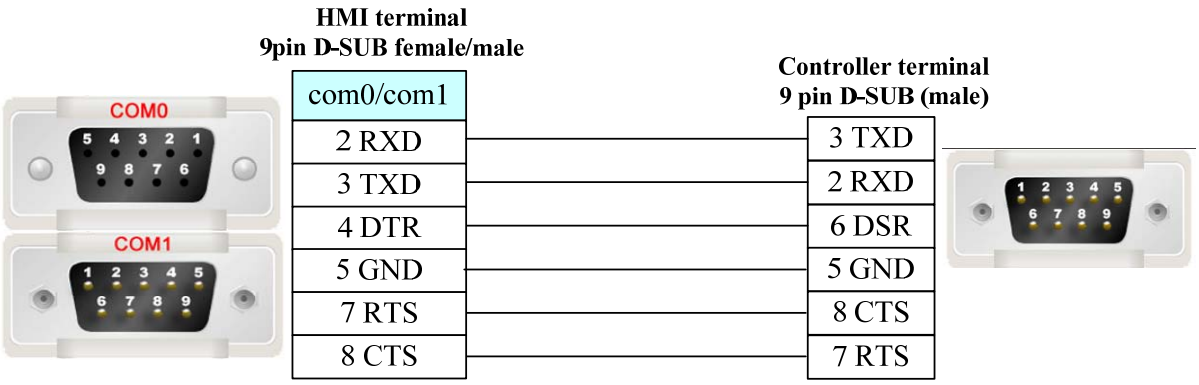
| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Input | I0-8091 | ------ | DDDDD | |
| Output | O0-8091 | ------ | DDDDD | |
| Flag | F0-8091 | ------ | DDDD | |
| Timer | ------ | T0-1599 | DDDD | |
| Counter | ------ | C0-1599 | DDDD | |
| Register | ------ | R0-4095 | DDDD | |
| Register（support single float point） | ------ | R_Float0-4095 | DDDD | |

## Cable Diagram

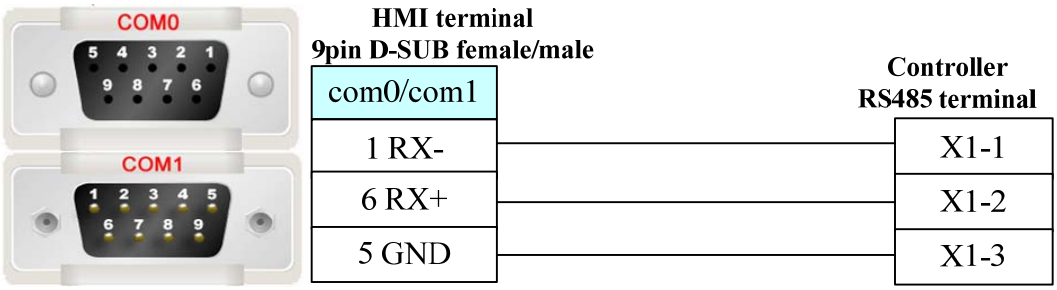
### Pcs1.c8 RS232 communication cable




### PCD2.M110 RS232 communication cable




### Pcs1.c8 RS485 communication cable




## 6.61 Sailsors D9 (Temperature Controller)

### Serial Communication

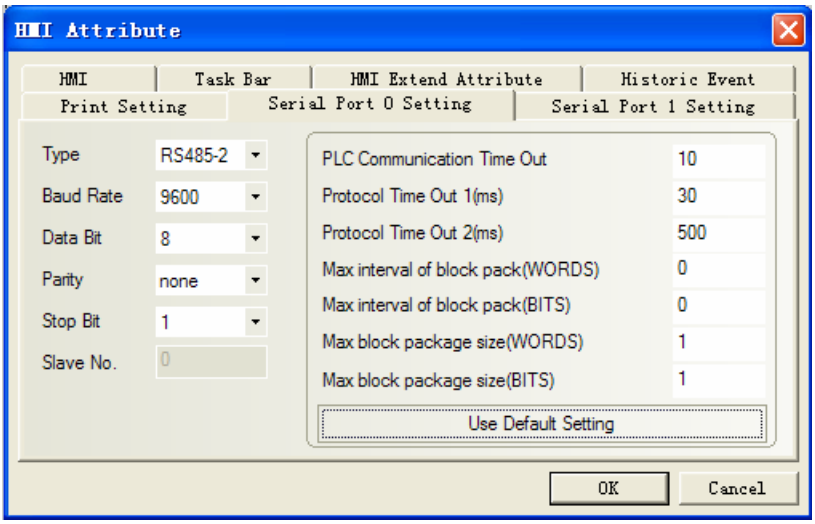
| Series | CPU | Link Module | Driver |
|---|---|---|---|
| Sailsors D9 | Swp-T16-80-08-N | RS232 on the CPU unit | Sailsors D9 |

### System configuration

| Series | CPU | Link Module | COM Type | Parameter | Cable |
|---|---|---|---|---|---|
| Sailsors D9 | Swp-T16-80-08-N | RS485 on the CPU unit | RS485 | Setting | Your owner cable |

### Communication Setting

#### Sailsors D9 RS485 communication

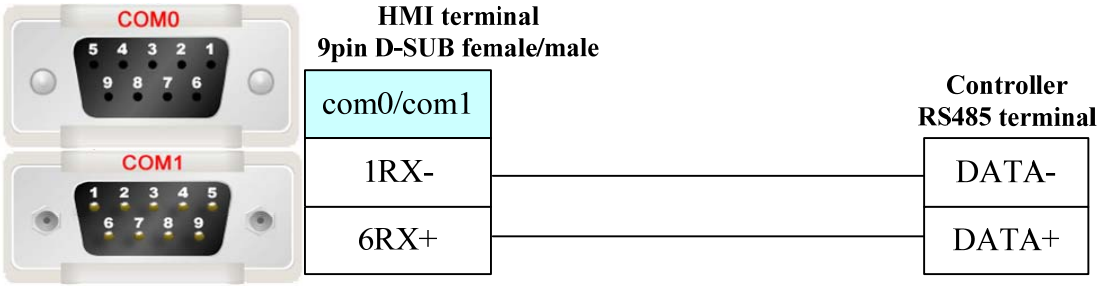



## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Channel Sample Value | ------ | CH 0~16 | DD | |
| Channel Indexing | ------ | SN 1~16 | DD | |

## Cable Diagram

### Sailsors D9 RS485 communication cable




# 6.62 Schneider Electric, Ltd.

## Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| Micro | TSX3705001<br>TSX 37 05 028DR1<br>TSX 37 08 056DR1<br>TSX 37 10 128DT1<br>TSX 37 10 128DR1<br>TSX 37 10 128DTK1 | TER port on the CPU | Schneider Modicon<br>Uni-TelWay<br>Modbus RTU |

| | | | |
|---|---|---|---|
| | TSX 37 10 164DTK1<br>TSX 37 10 028AR1<br>TSX 37 10 028DR1<br>TSX 37 21 101<br>TSX 37 22 101<br>TSX 37 21 001<br>TSX 37 22 001 | | |
| Premium | TSX P57 103M<br>TSX P57 153M<br>TSX P57 203M<br>TSX P57 253M<br>TSX P57 303M<br>TSX P57 353M<br>TSX P57 453M | TER port on the CPU | |
| Nano | TSX 07 3L □□□□28<br>TSX 07 30 10□□□□<br>TSX 07 31 16□□□□<br>TSX 07 31 24□□□□<br>TSX 07 32 □□□□28<br>TSX 07 33 □□□□28 | Programming port on CPU | |
| Twido | TWD LCAA 10DRF<br>TWD LCAA 16DRF<br>TWD LCAA 24DRF<br>TWD LMDA 20DTK<br>TWD LMDA 20DUK<br>TWD LMDA 20DRT<br>TWD LMDA 40DTK<br>TWD LMDA 40DUK | RS485 on the CPU unit | Schneider Twido Modbus RTU |

## System configuration

| Series | CPU | Link Module | Driver | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|---|
| Modicon TSX | TSX3705001 | RS485 on the CPU unit | Schneider Modicon Uni-TelWay | RS232 | Setting | Your owner cable |
| | TSX3705001<br>TSX 37 05 028DR1<br>TSX 37 08 056DR1<br>TSX 37 10 128DT1<br>TSX 37 10 128DR1<br>TSX 37 10 128DTK1<br>TSX 37 10 164DTK1<br>TSX 37 10 028AR1<br>TSX 37 10 028DR1<br>TSX 37 21 101 | | | RS485-2 | Setting | Your owner cable |

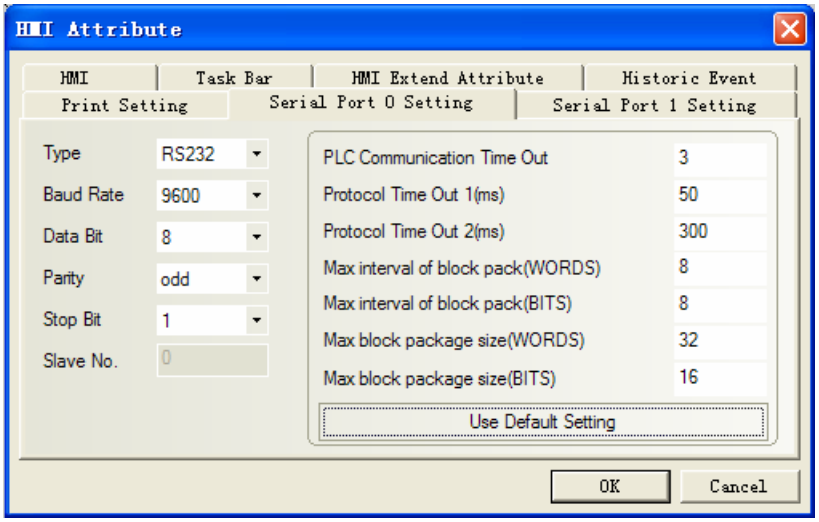
| | | | | | | |
|---|---|---|---|---|---|---|
| | TSX 37 22 101<br>TSX 37 21 001<br>TSX 37 22 001 | | | | | |
| | TSX3705001 | RS485 on the CPU unit | Modbus RTU | RS232 | Setting | Your owner cable |
| | TSX3705001<br>TSX 37 05 028DR1<br>TSX 37 08 056DR1<br>TSX 37 10 128DT1<br>TSX 37 10 128DR1<br>TSX 37 10 128DTK1<br>TSX 37 10 164DTK1<br>TSX 37 10 028AR1<br>TSX 37 10 028DR1<br>TSX 37 21 101<br>TSX 37 22 101<br>TSX 37 21 001<br>TSX 37 22 001 | | | RS485-2 | Setting | Your owner cable |
| Twido | TWD LCAA 10DRF | RS485 on the CPU unit | | RS232 | Setting | Your owner cable |
| | TWD LCAA 16DRF<br>TWD LCAA 24DRF<br>TWD LMDA 20DTK<br>TWD LMDA 20DUK<br>TWD LMDA 20DRT<br>TWD LMDA 40DTK<br>TWD LMDA 40DUK | | | RS485-2 | Setting | Your owner cable |

## Communication Setting

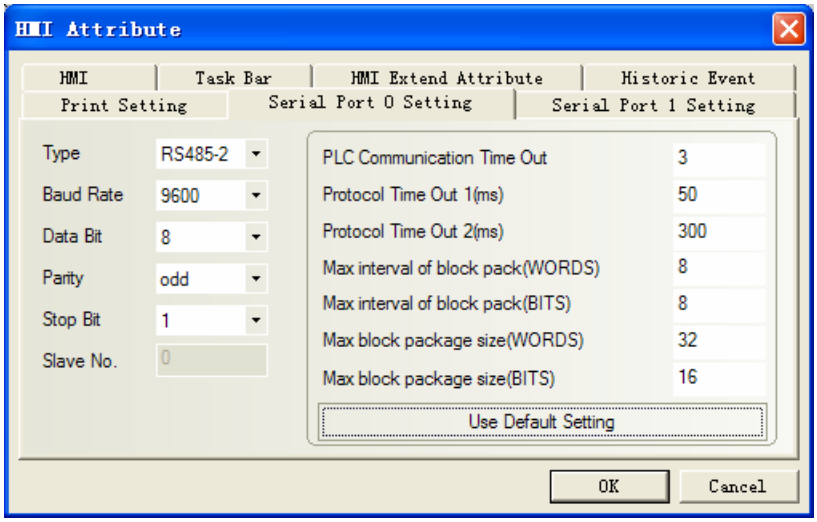
**Uni-TelWay protocol default communication：** 9600, 8, odd, 1; station:1.

RS232 communication

Note: Cable by Schneider Electric Industries, Rotary switch setting: 2(TER Direct)



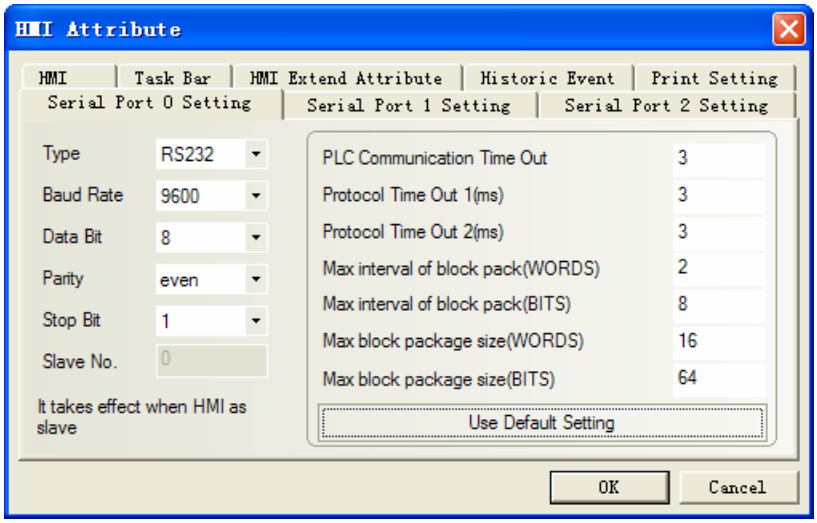
RS485 communication



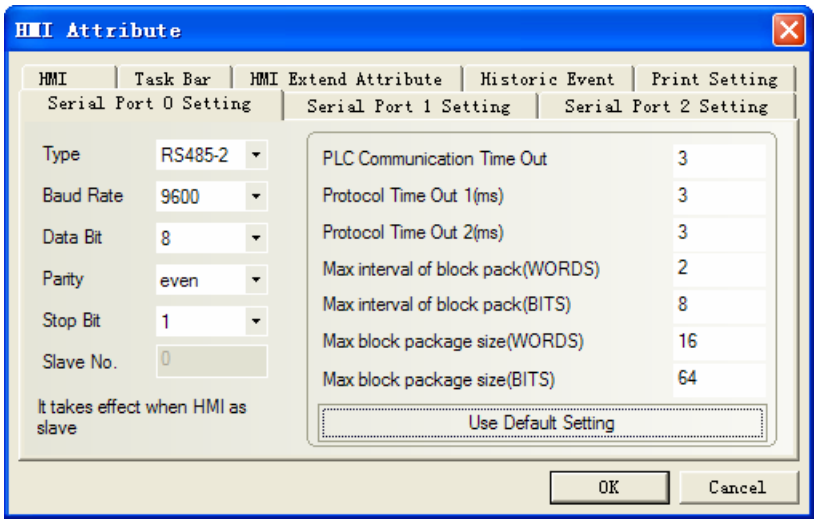

**protocol default communication：** 9600, 8, even, 1; station: 1.

RS232 communication

Note: Cable by Schneider Electric Industries, Rotary switch setting: 3(OTHER Direct)

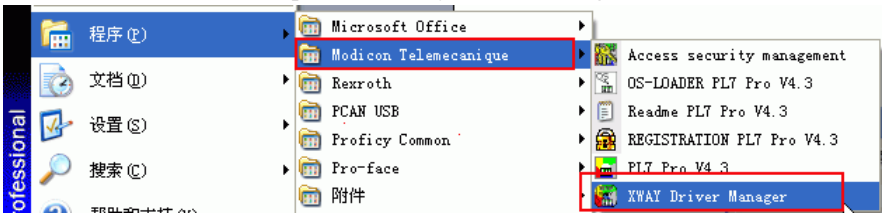



RS485 communication

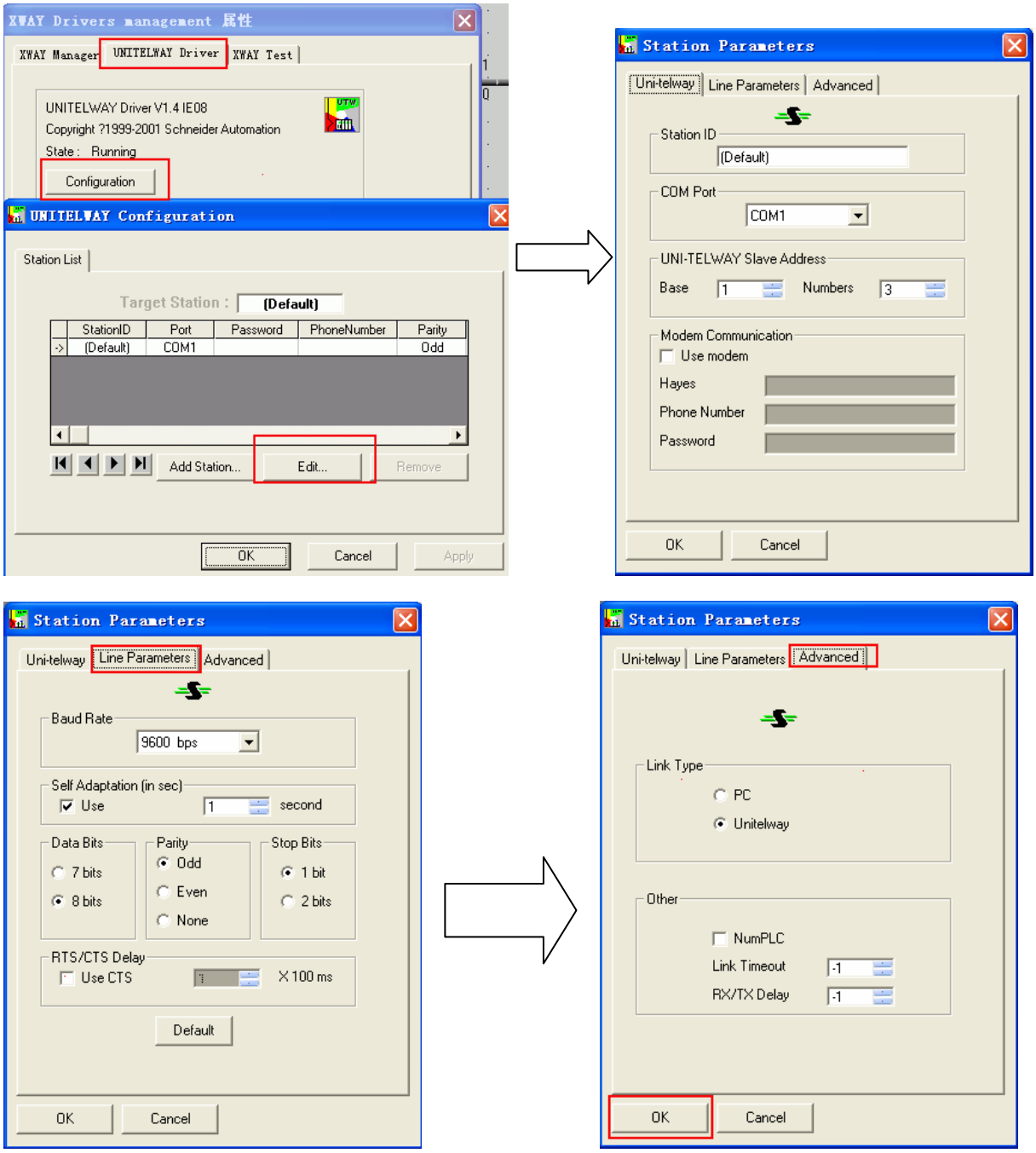


# PLC Setting

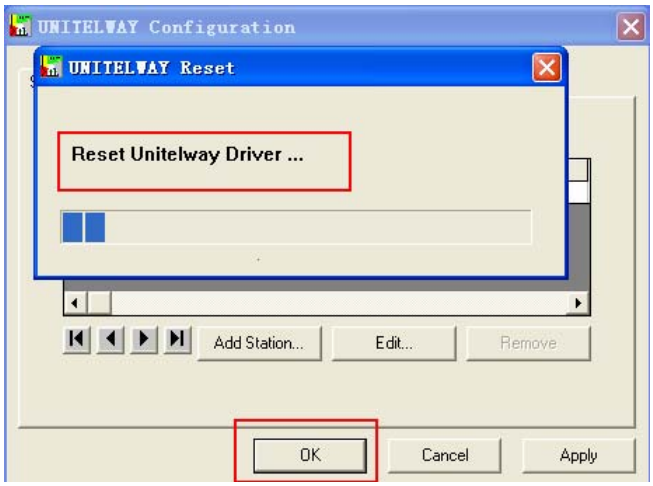
1. Sort menu-→“modicum telemecanique” → “xway driver manager” to set communication parameter



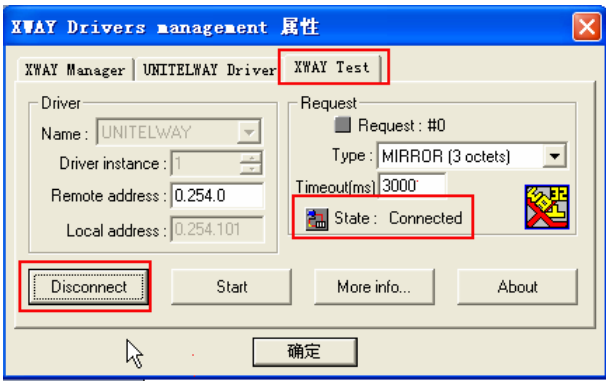

2. Pop-up to select “unitelway driver”→”configuration”→”edit” to modify communication parameter



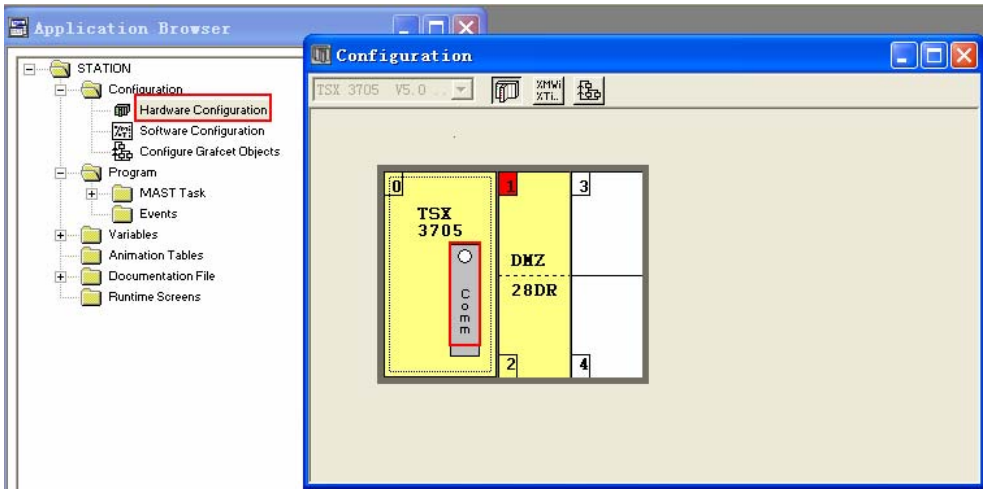

3. Press ”ok” and pop up the following tips



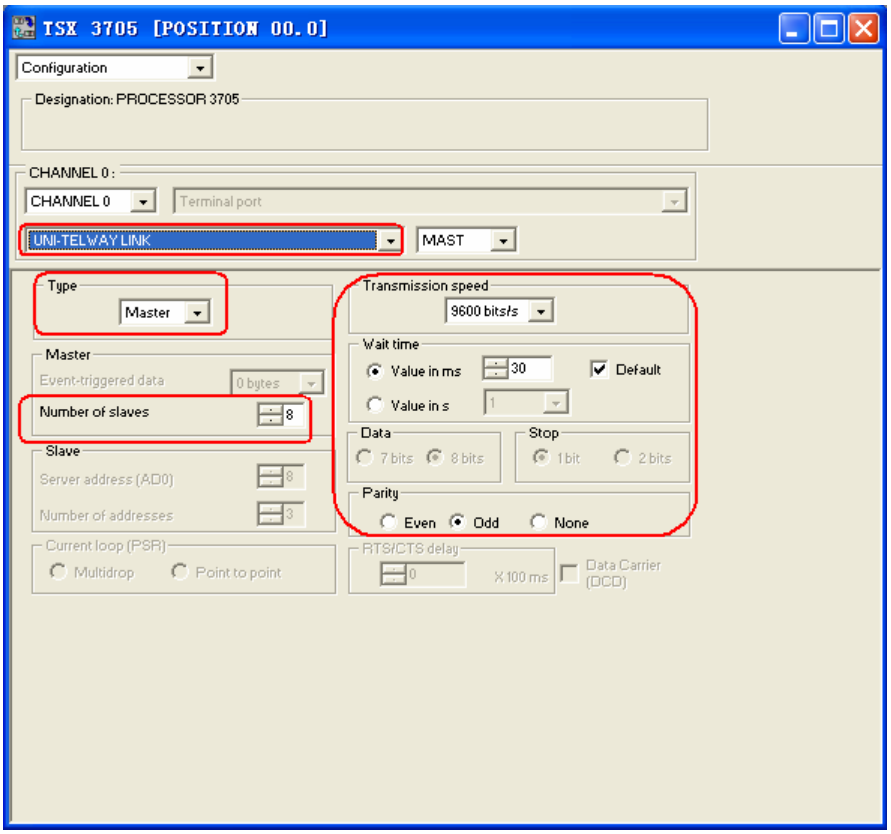
4. And then click ”xway test”→”connect”, if the connection is successful, it will clue “connected”



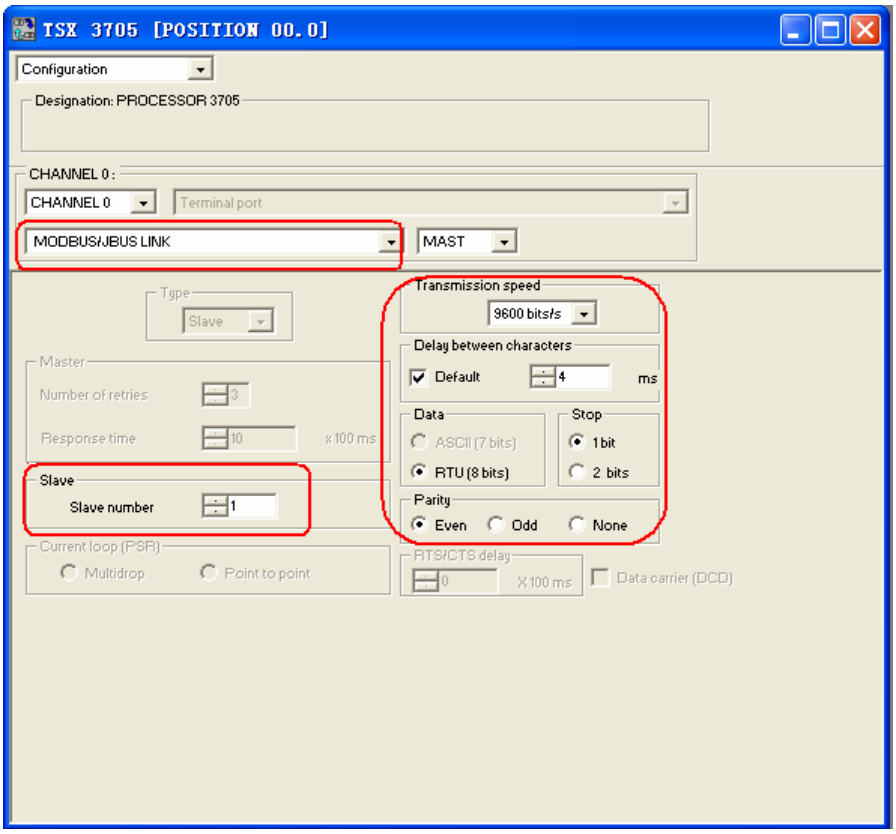

5. Open the PL7 software→”create new project” → click “hardware configuration”—>double-click pop-up window “comm”




Unitel-way protocol setting:




Modbus protocol setting:：



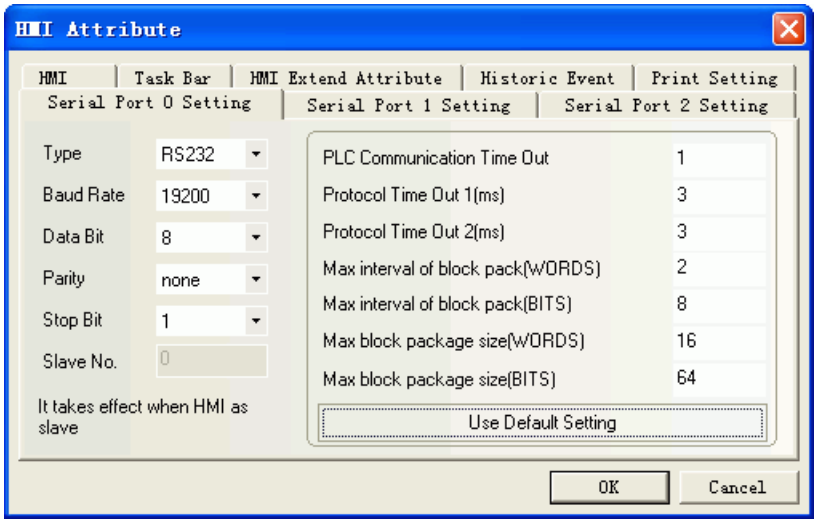

6. Setting up the configuration and download the project to the PLC

**Schneider Twido Modbus RTU protocol default communication:** 19200, 8, none, 1;

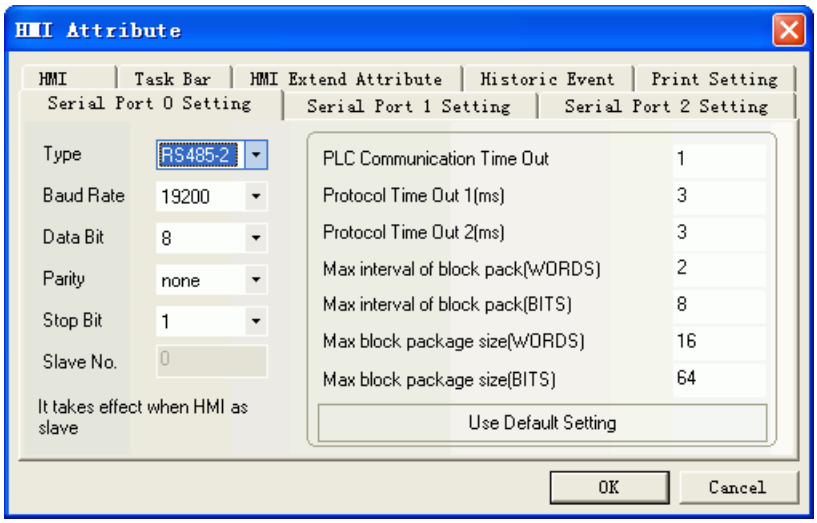
station: 1

Note: Cable by Schneider Electric Industries, Rotary switch setting: 2(TER Direct).

RS232 communication

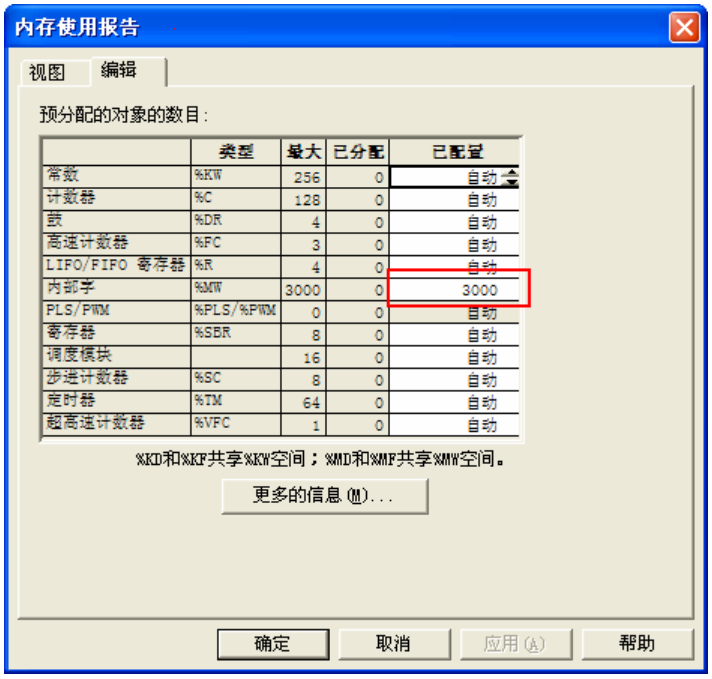



RS485communication

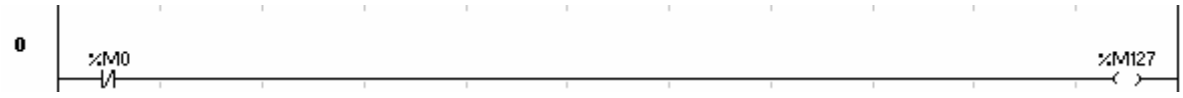



## Twido Software setting

1. Specify a large number for the internal word in the “controller > memory use >edit” and load the configuration into the PLC to open the memory area for the words. If set the internal word 3000, you can use address of MW before 3000.




2. You must program a coil with maximum address to open the memory area for the Bits. If you program a coil with 127 addresses, then the address before 127 can be used.




## Supported Device

### Modicon TSX

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Internal Relay | S00000-32767 | ------ | DDDDD | |
| Auxiliary Relay | M00000-32767 | ------ | DDDDD | |
| Data Register Relay | MW.B0000-9999.F | ------ | DDDD.H | |
| Data register | ------ | MW0000-7999 | DDDD | |
| Data register double word | ------ | MD0000-7999 | DDDD | |

### Twido

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Output Relay | 0X 1-9999 | ------ | DDDD | |
| Input Relay (read only) | 1X 1-9999 | ------ | DDDD | |
| Input Register (read only) | ------ | 3X 1-9999 | DDDD | |
| Output Register | ------ | 4X 1-9999 | DDDD | |

**Note:**

The M register in the software of TWIDO corresponds to 0X in the ev5000 software; MW corresponds to 4X.The HMI's address must plus 1 to correspond with the address of PLC.

e.g.: M0 corresponds to OX1.

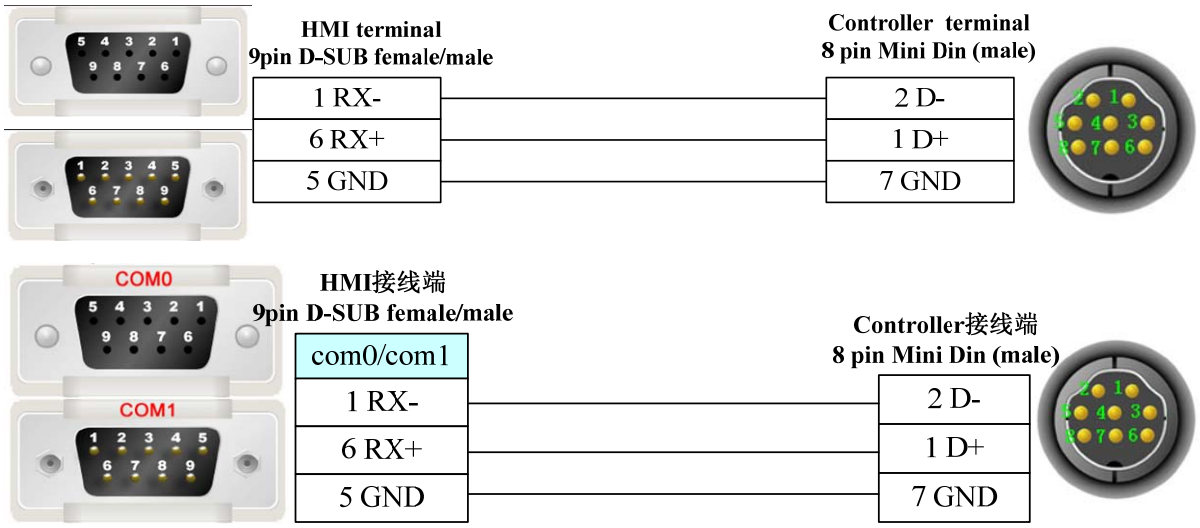
Don't use 1X, 3X device, because there is no correspondence with the PLC.

# Cable Diagram

## Uni-TelWay RS232

Cable recommended by Schneider Electric Industries, Rotary switch setting: 2(TER Direct)（Add a direct line）

## Uni-TelWay RS485



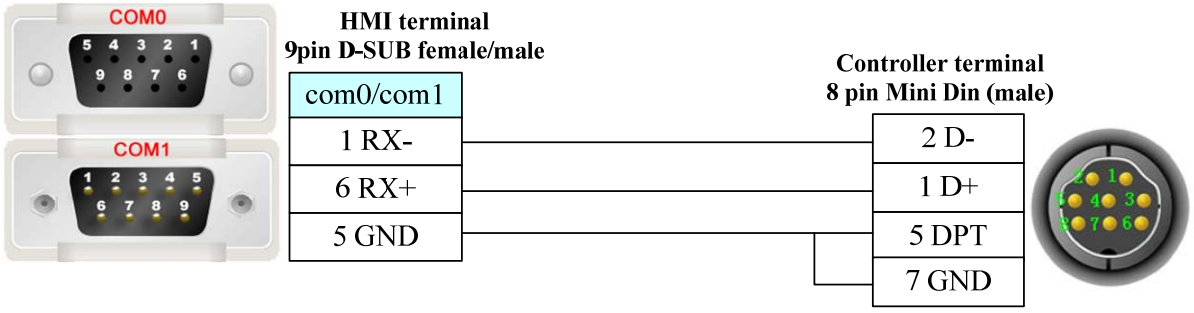

## Modicon modbus Protocol RS232

PLC software setting: "Hardware Configuration"→double click "Ccom" to select "MODBUS/BUS LINK"; others are default parameters.

Cable recommended by Schneider Electric Industries, Rotary switch setting: 3 (OTHER Direct)

## Modicon modbus Protocol RS485

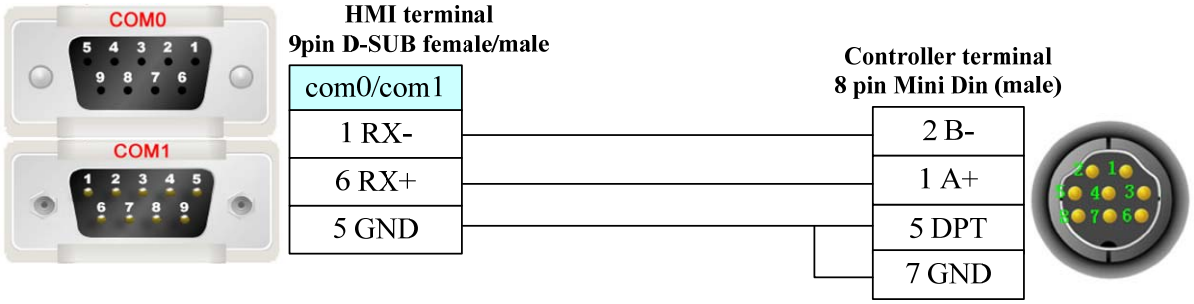
PLC software setting: "Hardware Configuration"→double click "Ccom" to select " MODBUS/BUS LINK"; Others are default parameters.




## Twido RS232 communication cable

Cable recommended by Schneider Electric Industries

## Twido RS485 communication cable




## 6.63 SHIMADEN FP23

### Serial Communication

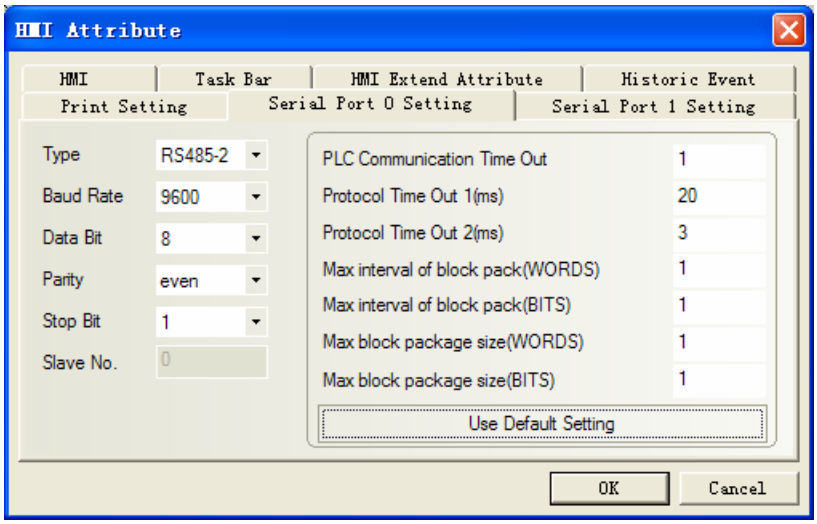
| Series | CPU | Link Module | Driver |
|---|---|---|---|
| FP23 | FP23 | RS485 on the CPU unit | SHIMADEN FP23 |

### System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| FP23 | FP23 | RS485 on the CPU unit | RS485 | Setting | Your owner cable |

### Communication Setting

**RS485-2 default communication:** 9600, 8, even, 1; station: 1




### Supported Device

| Device | Bit Address | Word Address | Format |
|---|---|---|---|
| State instructions(Write Only) | Ctrl_Write 184-252 | ------ | HHH |

| | | | |
|---|---|---|---|
| Sequence code(Read Only) | ------ | Array Code 0-3 | H |
| Basic parameter value（Read Only） | ------ | Basic_Read 00-42 | HH |
| OUT1_W,OUT2_W(Write Only) | ------ | Out_Write 0-1 | H |
| PV1，PV2（Read Only） | ------ | PV_Read 0-1 | H |
| Reference（Read & Write） | ------ | Reference 300-952 | HHH |

## Basic_Read operatable address

| PLC addr（HEX） | Parameter | R/W | Parameters mean |
|---|---|---|---|
| **00H** | PV_W | Read | Measurements |
| **01H** | SV_W | Read | Setting value |
| **02H** | OUT1_W | Read | Output1 value |
| **03H** | OUT2_W | Read | Output2 value |
| **04H** | EXE_FLG | Read | Execute_flag（no execute=0） |
| **05H** | EV_FLG | Read | Event_flag（no event output 0000） |
| **06H** | Reserve | Read | value:0000H |
| **07H** | EXE_PID | Read | Execute_PID No. |
| **09H** | HB_W | Read | Heater break alarm |
| **0AH** | HL_W | Read | Heater loop alarm |
| **0BH** | DI_FLG | Read | DI status flag |
| **10H** | UNIT | Read | Measurement unit |
| **11H** | RANGE | Read | Measuring range |
| **12H** | CJ | Read | Cold junction compensation 0=Internal 1=External |
| **13H** | DP | Read | Decimal position, 0=none 1=0.1 2=0.01 3=0.001 4=0.0001 |
| **14H** | SC_L | Read | PV lower limit side scaling |
| **15H** | SC_H | Read | PV higher limit side scaling |
| **16H** | DPFLG | Read | 0=show 1=cancel |
| **20H** | E_PRG | Read | Execute flag of program |
| **21H** | E_PTN | Read | Execution step No. of step loop |
| **22H** | Reserve | Read | Reserve |
| **23H** | E_RPT | Read | Curve repeat time |
| **24H** | E_STP | Read | Execution count of step loop |
| **25H** | E_TIM | Read | Step time |
| **26H** | E_PID | Read | PID No. execution |
| **29H** | E_STPRPT | Read | Number of steps |
| **42H** | POSI | Read | Seven switches（feedback 0-100） |

## Ctrl_Write operatable address example

| PLC addr（HEX） | Parameter | R/W | Parameters mean |
|---|---|---|---|
| **184H** | AT | write | Execution automatically adjustment 0：OFF1：ON |
| **18CH** | COM | write | Communication Protocol：0: LOC 1: COM |

### Reference operatable address example

| PLC Addr（HEX） | Parameter | R/W | Parameters mean |
|---|---|---|---|
| **300H** | FIX_SV | R/W | FIX mode SV: in the limit range of SV |
| **460H** | PB21 | R/W | ratio coefficient：0.0 to 999.9%(0.0=OFF) |

About device address details, please refer to the FP23 communication protocol.

**Show: H indicates HEX**

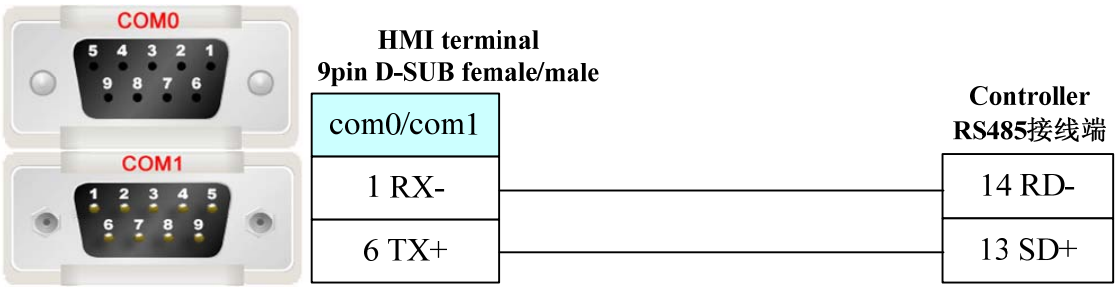
**Note:** 1、Setting the parameters of ADDR address, the settings must be the same as the corresponding PLC station.

2、When Connecting multiple instruments, for distinguishing instruments, each instrument must be set different ADDR value.

## Cable Diagram

**FP23 programmable PID regulator of 8 point and 10 point must be shorted or communications failure**

### FP23 RS485 port




# 6.64 SIEMENS

## Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| S7-200 | CPU212<br>CPU214<br>CPU215<br>CPU216<br>CPU221<br>CPU222<br>CPU224<br>CPU226 | RS485 on the CPU unit | Siemens S7-200 |
| S7-200 CN | CPU224 XP CN<br>CPU226 XP CN | RS485 on the CPU unit | |
| S7-300 | CPU312IFM<br>CPU313<br>CPU313C | MPI port on the CPU unit | 1. Siemens S7-300/400 (PC Adapter)<br>2. Siemens S7-300/400 (via MPI |

| | | | |
|---|---|---|---|
| | CPU314<br>CPU314IFM<br>CPU315<br>CPU315-2 DP<br>CPU316<br>CPU316-2 DP<br>CPU318-2 | | |
| S7-400 | CPU412-1<br>CPU412-2 DP<br>CPU413-1<br>CPU413-2 DP<br>CPU414-1<br>CPU414-2 DP<br>CPU414-3 DP<br>CPU416-1<br>CPU416-2 DP<br>CPU416-3 DP<br>CPU417-4 | MPI port on the CPU unit | port) *1 |

**Note：Don't hot plug！！！**

## Ethernet Communication (Direct online simulation disable)

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| SIMATIC S7-200 | CPU222<br>CPU224<br>CPU224 XP<br>CPU226 | CP 243-1 IT<br>CP 243-1 | Siemens S7-200 Network Slave |
| SIMATIC S7-1200 | CPU1214C | CPU | Siemens S7-1200 Network Slave |
| SIMATIC S7-300 | CPU315-2DP | CP 343-1 IT<br>CP 343-1 | Siemens S7-300 Network Slave |

## Serial System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| S7-200 | CPU222<br>CPU224<br>CPU226<br>CPU224 XP CN<br>CPU226 XP CN | RS485 on the CPU unit | RS232 | Setting | Your owner cable |
| | | | RS485-2 | Setting | Your owner cable |

| | | | | | |
|---|---|---|---|---|---|
| S7-300 | CPU312IFM<br>CPU313<br>CPU313C<br>CPU314<br>CPU314IFM<br>CPU315<br>CPU315-2 DP<br>CPU316<br>CPU316-2 DP<br>CPU318-2 | MPI port on the CPU unit | RS232<br>S7-300/400<br>(PC Adapter) | Setting | Your owner cable |
| | | | RS485<br>S7-300/400<br>(via MPI port) | Setting | Your owner cable |

## Ethernet System configuration

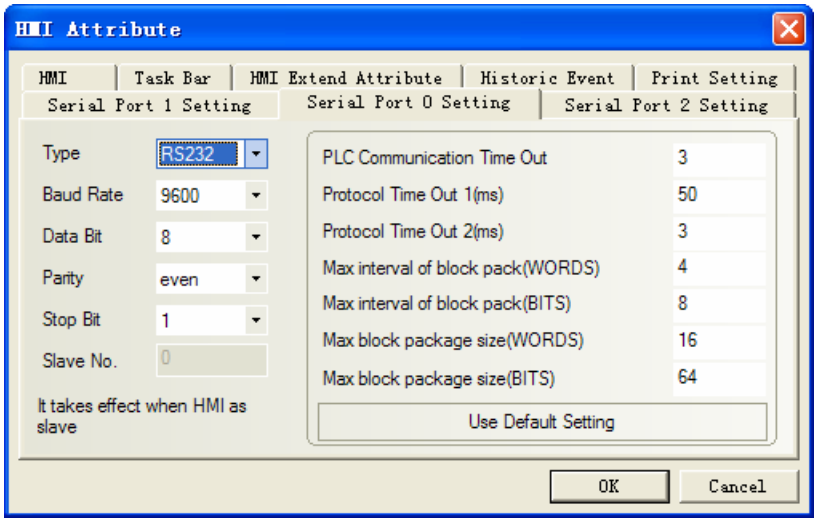
| Series | CPU | Link Module | Connect Type | Parameter | Cable |
|---|---|---|---|---|---|
| SIMATIC S7-200 | CPU222<br>CPU224<br>CPU224 XP<br>CPU226 | CP 243-1 IT<br>CP 243-1 | Ethernet | Setting | Your owner cable |
| SIMATIC S7-1200 | CPU1214C | CPU | Ethernet | Setting | Your owner cable |
| SIMATIC S7-300 | CPU315-2DP | CP 343-1 IT<br>CP 343-1 | Ethernet | Setting | Your owner cable |

## Serial Communication Setting

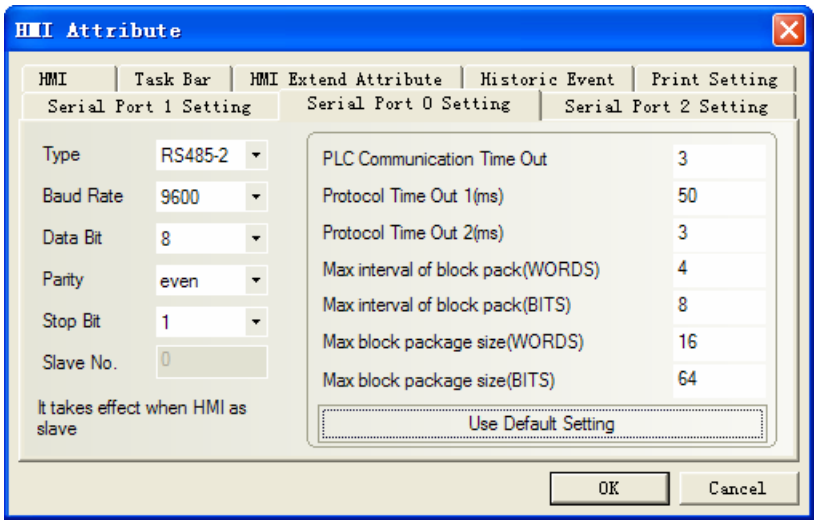
**S7-200 default communication:** 9600, 8, 1, even; station No.: 2.

1. HMI Baudrate can reach to187.5k, but don't support online simulate for187.5K.

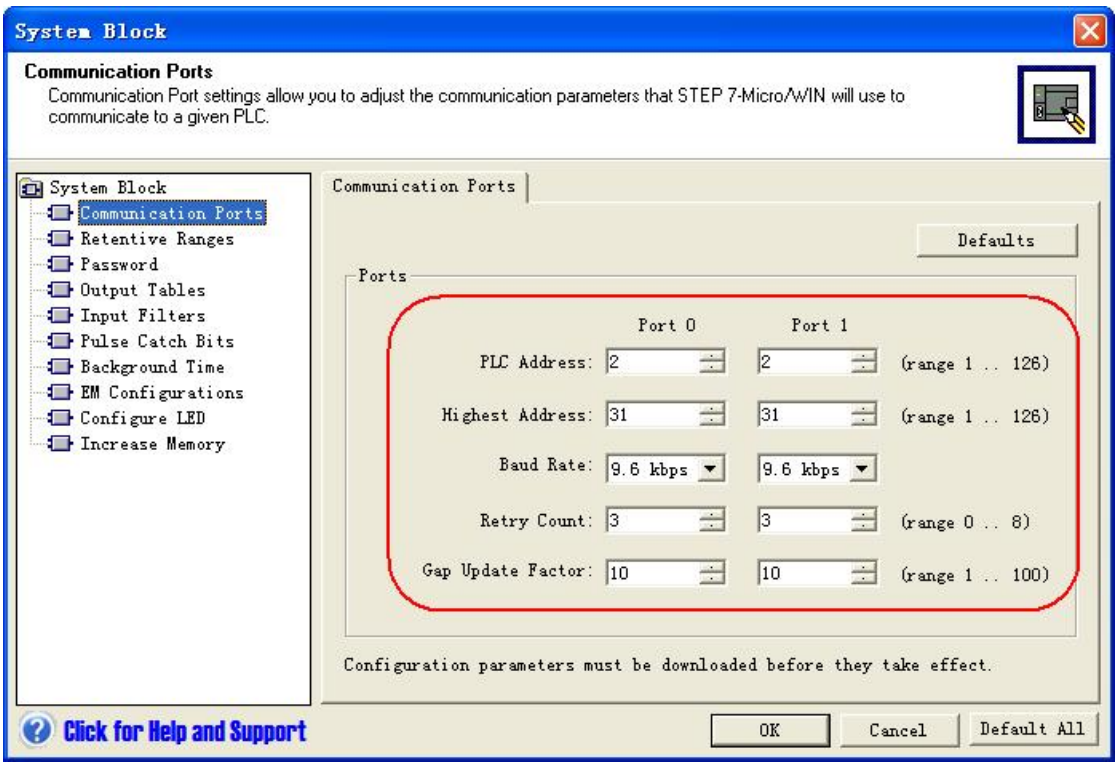
**RS232 communication**




**RS485 communication**




## S7-200 software setting




## Siemens S7-300/400 (PC Adapter) driver protocol

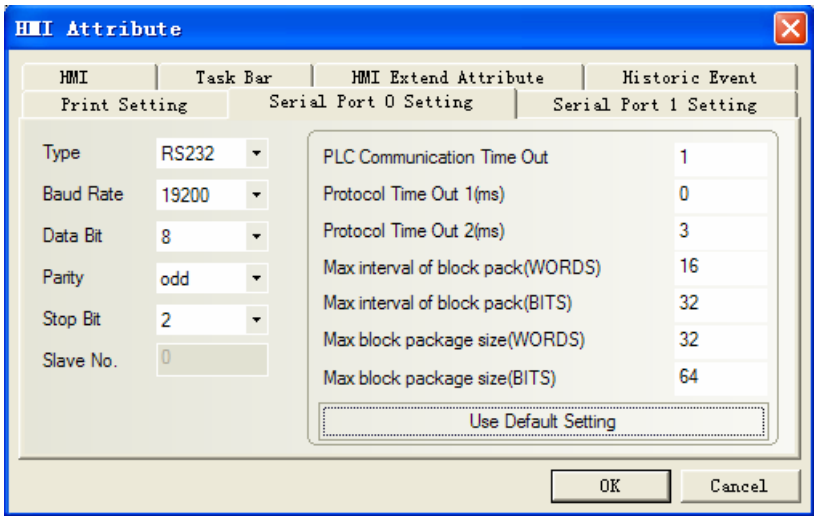
1. If you use adapter to communicate, PLC must be 187.5K.

2. HMI communication setting: 19200, 8, 2, odd; station No.: 2

3. If we use PC adapter, PLC station No. is not necessary, so the communication is one-to-one.

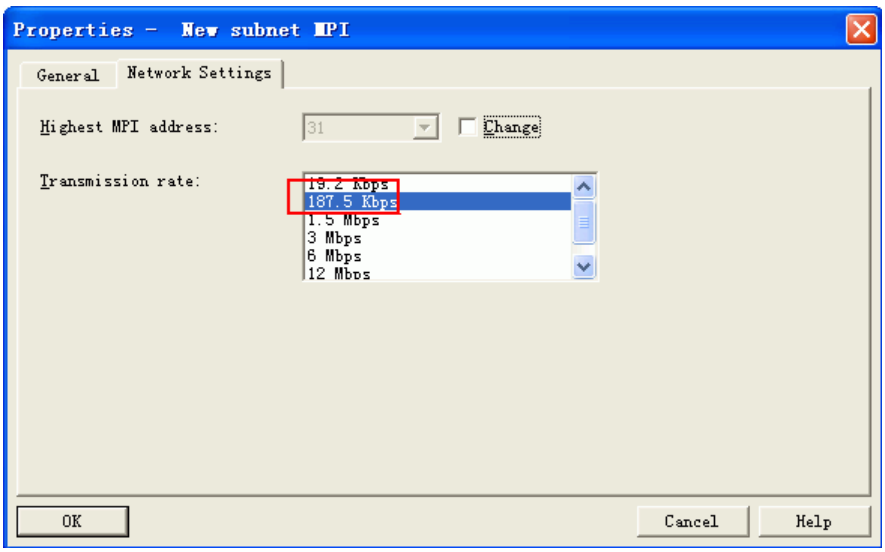
4. DB block must be created, otherwise the relevant registers can not write (DB.DBX, DB.DBW, DB.DBD). DBm.DBW, DBm.DBD address start must be an even number.

RS232 communication

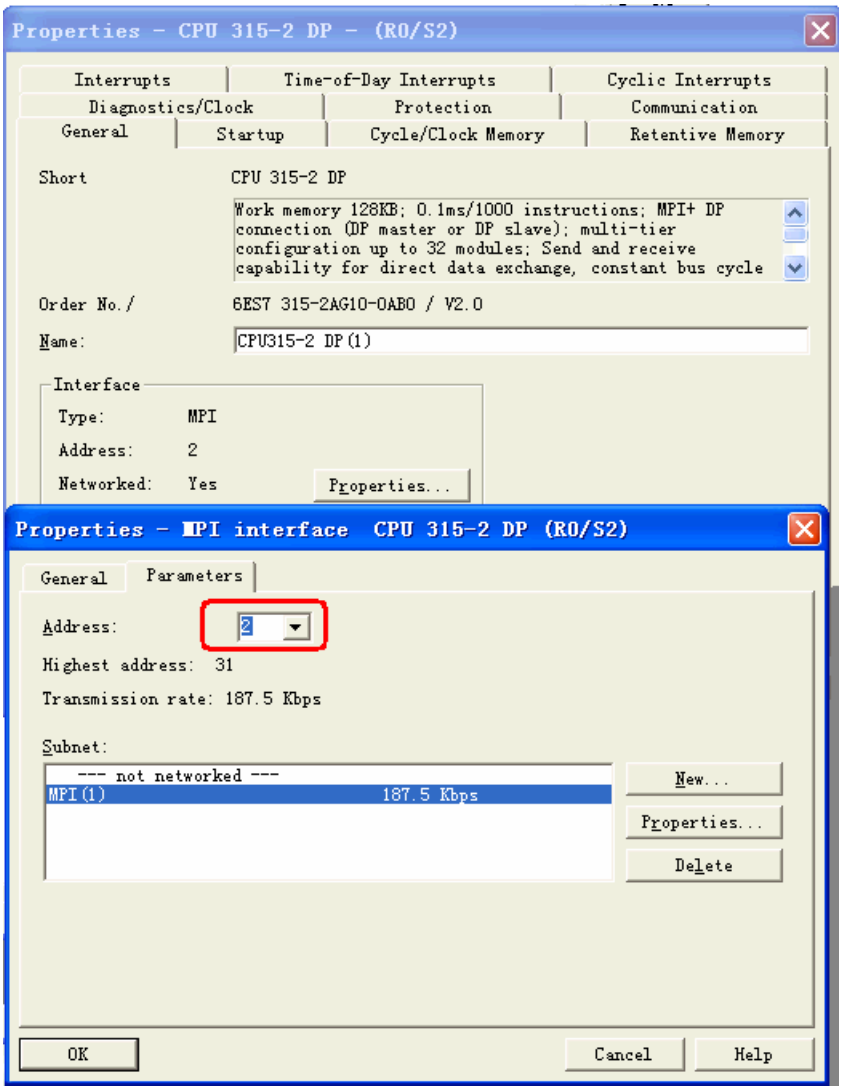



## Siemens S7-300/400 (PC Adapter) drive software setting

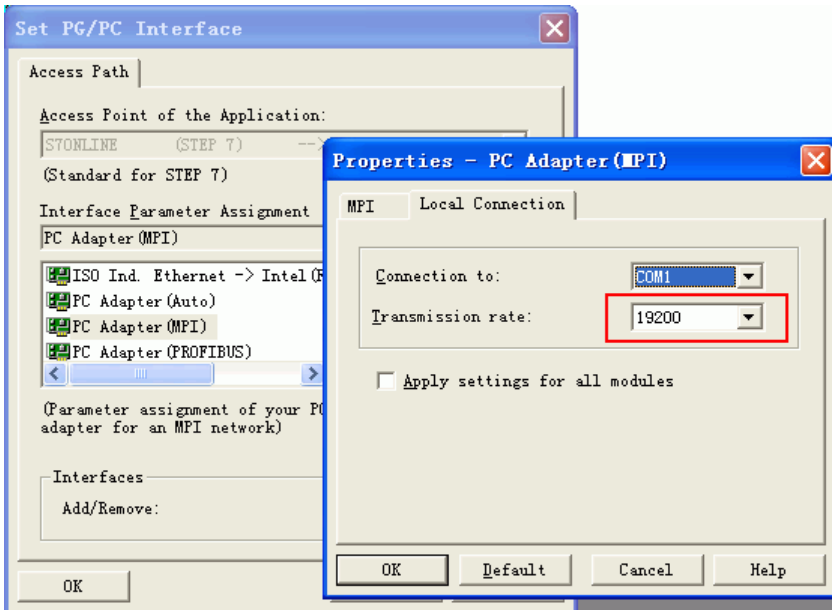
A）Production of the adapter with eview, MPI transmission rate must be set 187.5K. 19.2K general users of the transmission rate, if the S7-300 MPI-side transmission rate is 19.2K, you need to change it into the Siemens adapter 187.5K (where changes in the hardware properties)

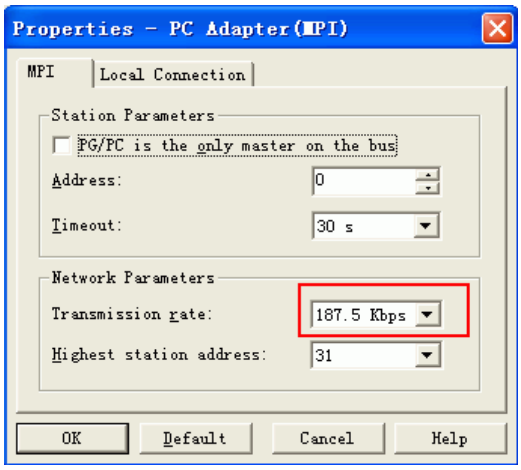



B）MPI address must be 2.




C) After the software change, downloaded to PLC, make sure the transmission rate of MPI is 187.5K, and then in the options set PG / PC interface, select PC Adapter (MPI), MPI-side of the transfer rate will be changed to 187.5K. Figure






## Siemens S7-300/400 (via MPI port) driver protocol

1. This drive only comport the HMI with MPI port. Don't support indirect online and direct online simulation.

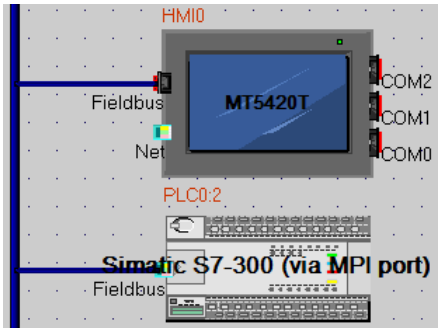
2. MPI is RS485 port, so we can use this drive to communicate between many HMI and PLC, and then we must set the master station No..

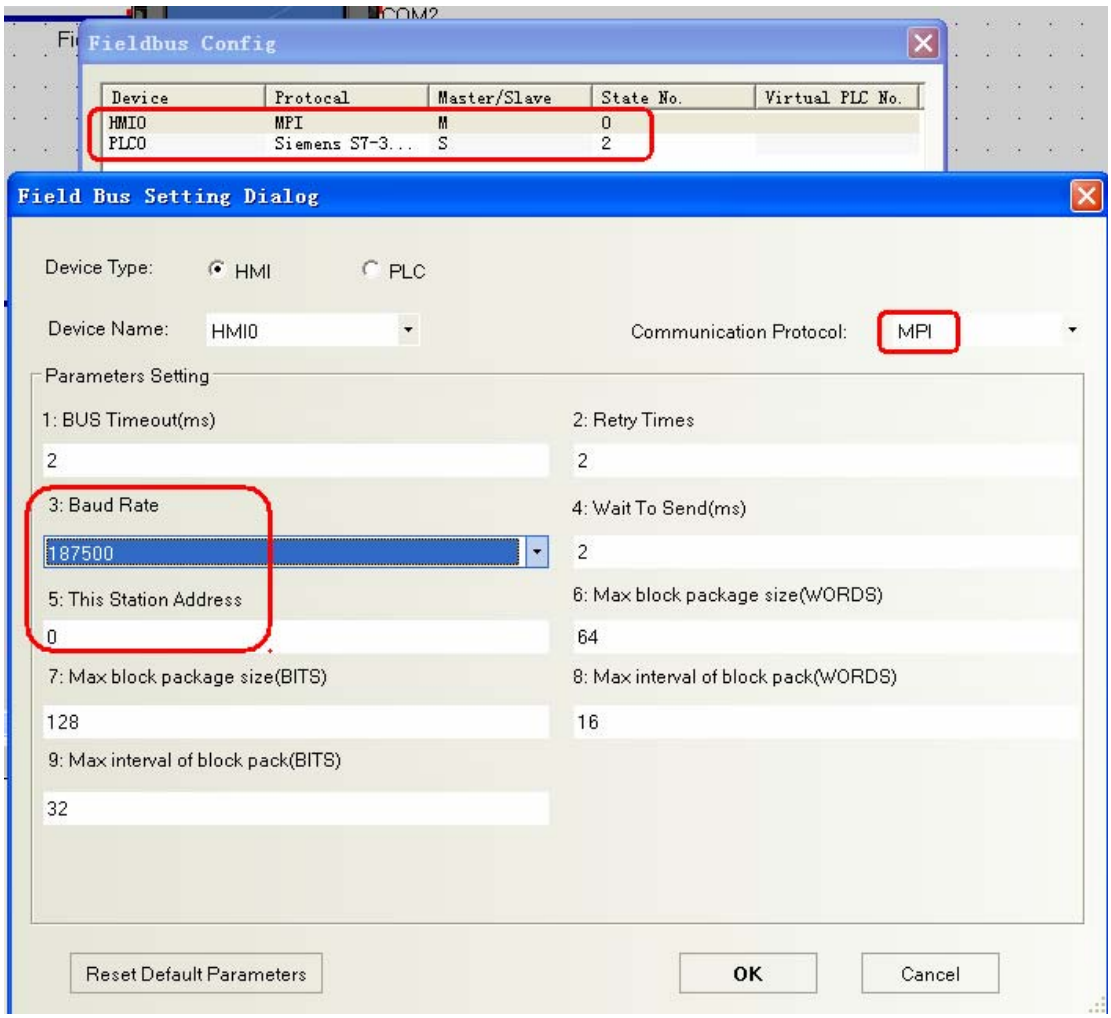
3. HMI station No. can be 0~15, PLC station No. must be 0~15, the station No. of HMI and PLC can not be the same number.

4. PLC baud rate is 187500.

5. You must set DB first, or register can not write（DB.DBX, DB.DBW, DB.DBD）. The initial address of DBm.DBW and DBm.DBD must be even.

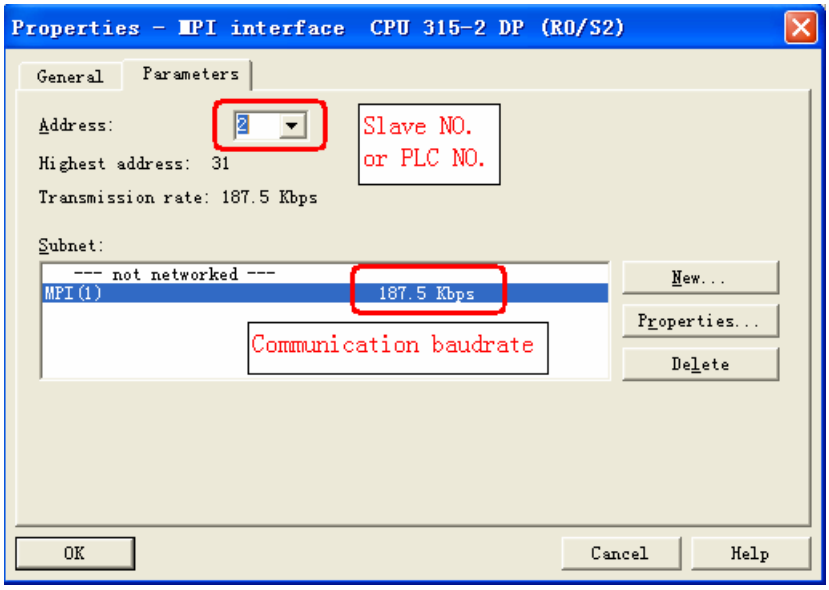
6. T/C register must be readonly.






### Siemens S7-300/400 (via MPI port) drive software setting

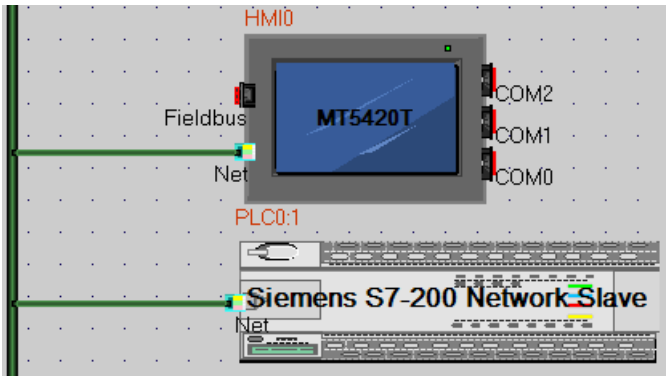
1. PLC station No. can be 0~15.
2. MPI baud rate can be 19.2k or 187.5k.



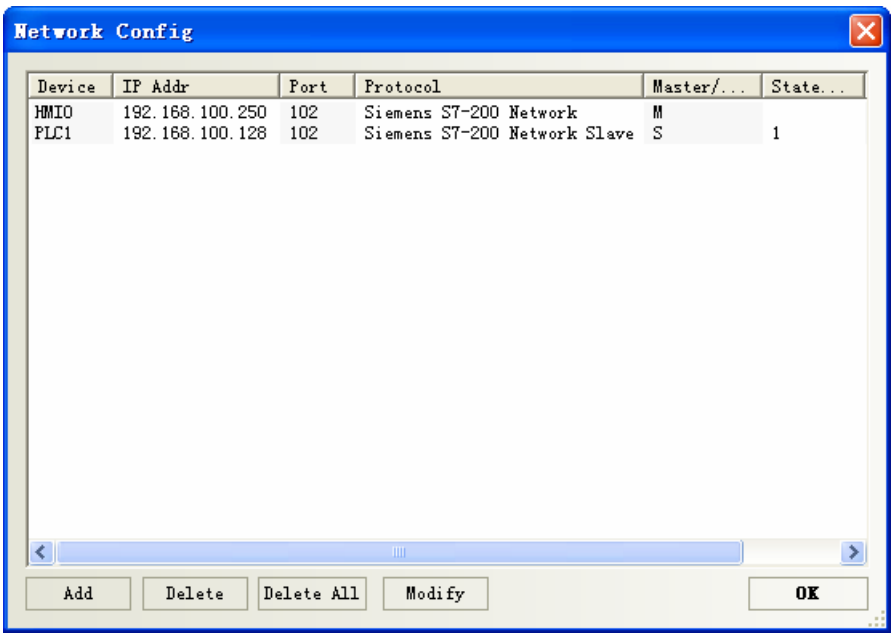

## Ethernet Communication Setting

## a. Siemens S7-200 Network Slave

HMI




Network configuration

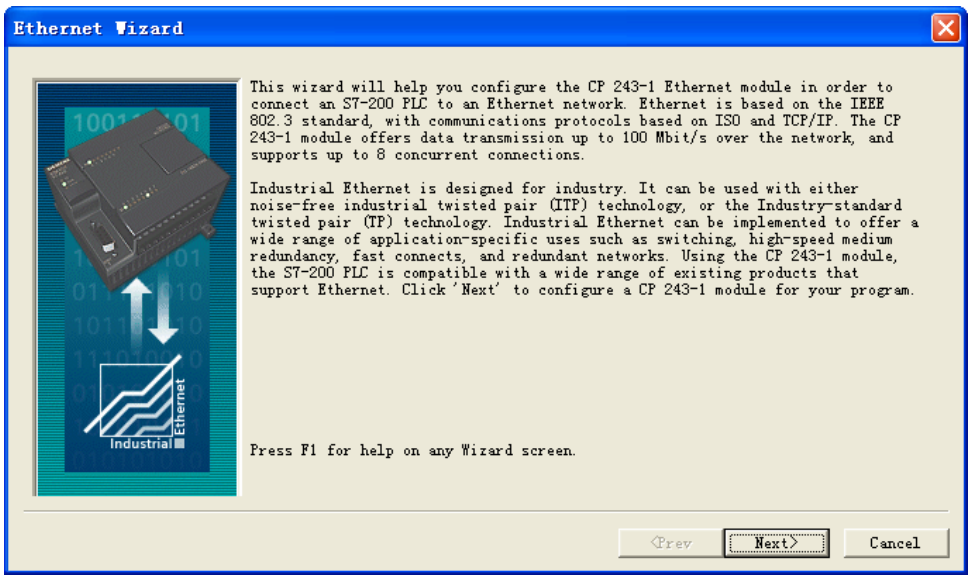



PLC configuration

The settings for the CP 243-1 are defined in STEP 7 Micro/WIN via the Ethernet Wizard. For assistance with all the information go to STEP 7 Micro/WIN Online Help via F1.

**1. Starting the Ethernet Wizard**

- Open STEP 7 Micro/WIN
- Start the Ethernet Wizard via “Tools >Ethernet Wizard….”
- Click on “Next”


Ethernet Wizard
This wizard will help you configure the CP 243-1 Ethernet module in order to connect an S7-200 PLC to an Ethernet network. Ethernet is based on the IEEE 802.3 standard, with communications protocols based on ISO and TCP/IP. The CP 243-1 module offers data transmission up to 100 Mbit/s over the network, and supports up to 8 concurrent connections.
Industrial Ethernet is designed for industry. It can be used with either noise-free industrial twisted pair (ITP) technology, or the Industry-standard twisted pair (TP) technology. Industrial Ethernet can be implemented to offer a wide range of application-specific uses such as switching, high-speed medium redundancy, fast connects, and redundant networks. Using the CP 243-1 module, the S7-200 PLC is compatible with a wide range of existing products that support Ethernet. Click 'Next' to configure a CP 243-1 module for your program.
Press F1 for help on any Wizard screen.
<Prev
Next>
Cancel

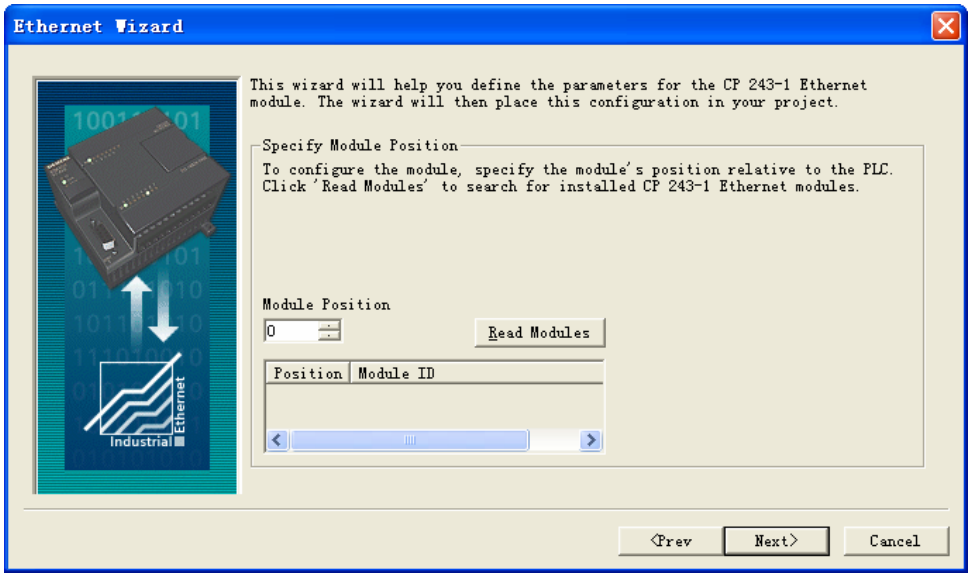
**2. Specifying module position**

If your PC is connected to the S7-200, click the "**Read modules**" button to determine the position of the CP 243-1 module automatically. Otherwise, the module position can also be entered manually.

Important:

The panel can only establish a connection with a Cp243-1 if the module is configured to "position 0".

- Check if the CP is connected in the module position "ZERO" and change the module position if necessary.
- Identify or enter the module position "ZERO".
- Click on "Next".


Ethernet Wizard
This wizard will help you define the parameters for the CP 243-1 Ethernet module. The wizard will then place this configuration in your project.
Specify Module Position
To configure the module, specify the module's position relative to the PLC. Click 'Read Modules' to search for installed CP 243-1 Ethernet modules.
Module Position
0
Read Modules
Position
Module ID
<Prev
Next>
Cancel

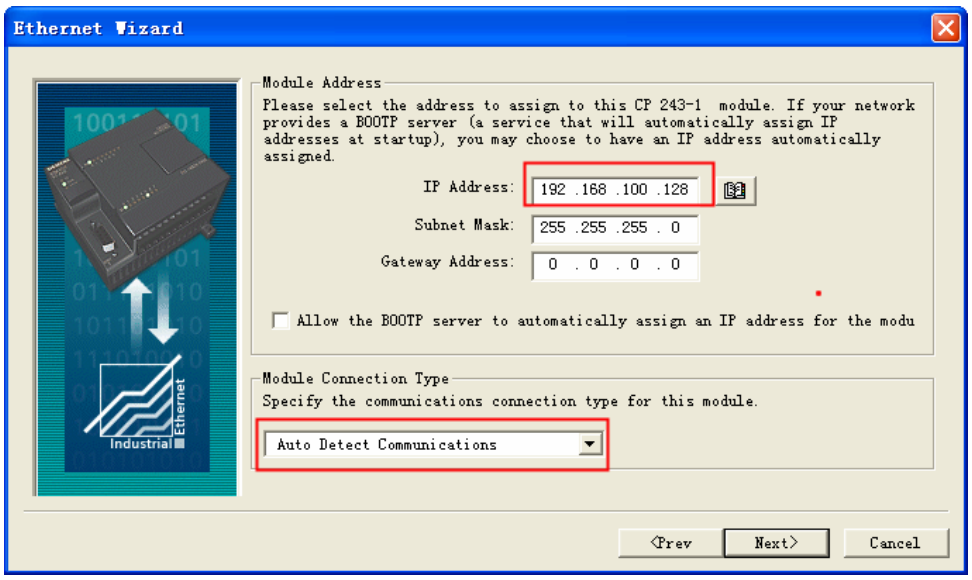
**3. Specifying IP address**

- Define an IP address for the CP 243-1.

**Caution:**The IP address for this application may not be taken automatically from a server because the panel requires a fixed reference partner (CP 243-1) for the Ethernet communication.

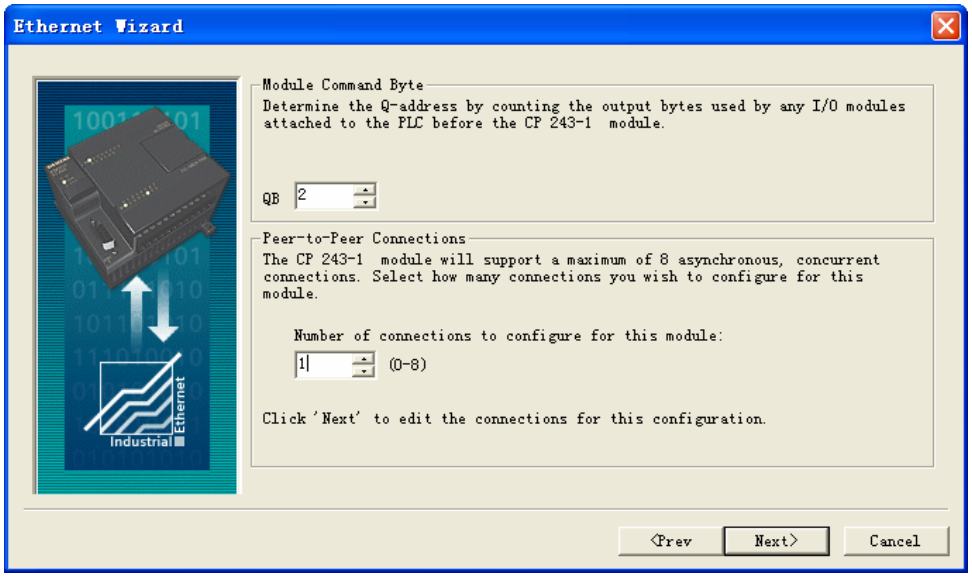
**Note:** The communication connection type for this module can be defined by the "Automatic Setting".

- Click on "**Next**" to continue.


Ethernet Wizard
Module Address
Please select the address to assign to this CP 243-1 module. If your network provides a BOOTP server (a service that will automatically assign IP addresses at startup), you may choose to have an IP address automatically assigned.
IP Address: 192 .168 .100 .128
Subnet Mask: 255 .255 .255 . 0
Gateway Address: 0 . 0 . 0 . 0
Allow the BOOTP server to automatically assign an IP address for the modu
Module Connection Type
Specify the communications connection type for this module.
Auto Detect Communications
<Prev
Next>
Cancel

**4. Parameterizing PtP connection**

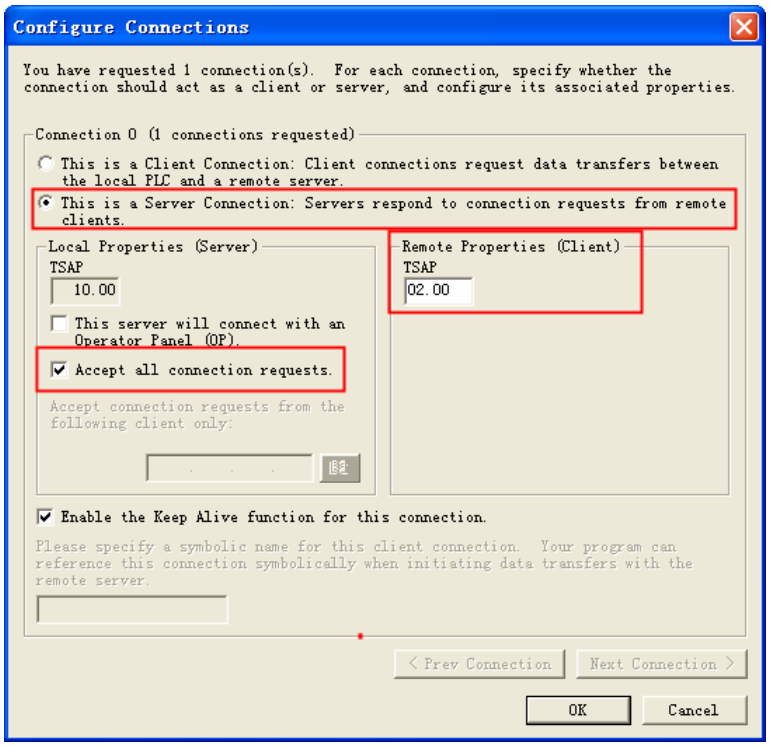
- Specify the command byte for the module and the number of point-to-point connections with the CP 243-1 .
- Click on “Next”.


Ethernet Wizard
Module Command Byte
Determine the Q-address by counting the output bytes used by any I/O modules attached to the PLC before the CP 243-1 module.
QB 2
Peer-to-Peer Connections
The CP 243-1 module will support a maximum of 8 asynchronous, concurrent connections. Select how many connections you wish to configure for this module.
Number of connections to configure for this module:
1 (0-8)
Click 'Next' to edit the connections for this configuration.
<Prev
Next>
Cancel

**5. Configuration connection**

- The configuration for connecting the CP 243-1 to the panel must be defined as in Fig..
- Click OK to confirm the entries.

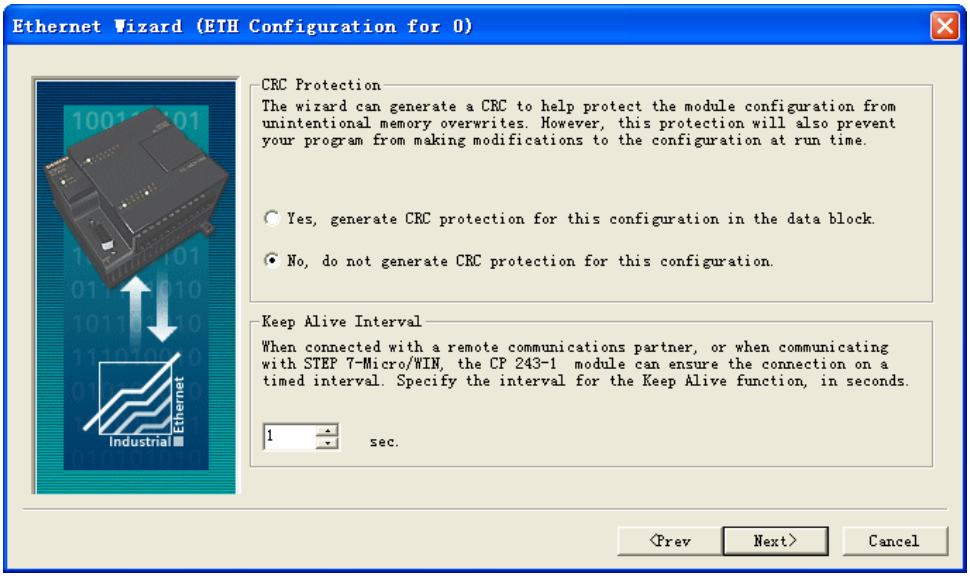
**Warning:** The TSAP must always be specified in four-digit format, with a leading zero (02.00).


Configure Connections
You have requested 1 connection(s). For each connection, specify whether the connection should act as a client or server, and configure its associated properties.
Connection 0 (1 connections requested)
This is a Client Connection: Client connections request data transfers between the local PLC and a remote server.
This is a Server Connection: Servers respond to connection requests from remote clients.
Local Properties (Server)
TSAP
10.00
This server will connect with an Operator Panel (OP).
Accept all connection requests.
Accept connection requests from the following client only:
Remote Properties (Client)
TSAP
02.00
Enable the Keep Alive function for this connection.
Please specify a symbolic name for this client connection. Your program can reference this connection symbolically when initiating data transfers with the remote server.
< Prev Connection
Next Connection >
OK
Cancel

## 6. Using CRC protection

Set the CRC protection the way you want it. It is advisable to work without CRC protection first of all. The "Keep Alive Interval" can be specified with the default time.

- Activate the CRC protection and change the time of the "Keep Alive Interval" if required.
- Click on "Next".


Ethernet Wizard (ETH Configuration for 0)
CRC Protection
The wizard can generate a CRC to help protect the module configuration from unintentional memory overwrites. However, this protection will also prevent your program from making modifications to the configuration at run time.
Yes, generate CRC protection for this configuration in the data block.
No, do not generate CRC protection for this configuration.
Keep Alive Interval
When connected with a remote communications partner, or when communicating with STEP 7-Micro/WIN, the CP 243-1 module can ensure the connection on a timed interval. Specify the interval for the Keep Alive function, in seconds.
1
sec.
Industrial Ethernet
<Prev
Next>
Cancel

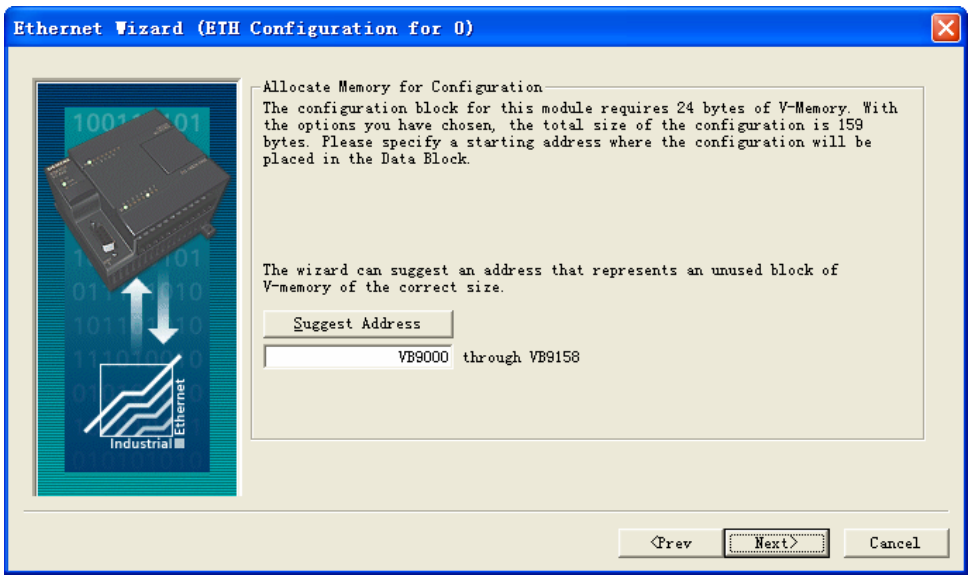
## 7. Assigning memory

- Specify a memory area for the configuration of the CP 243-1.

Recommend: If you click on **Suggest address**, the Wizard can identify a variable memory area.

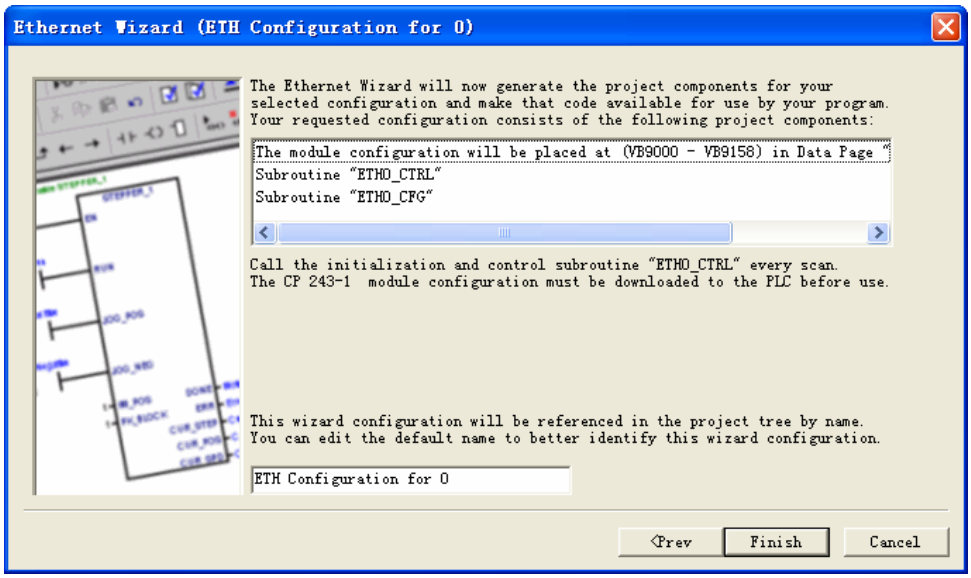
Note: The register used in the panel must be out of the memory area for the configuration.

- Click on "Next".


Ethernet Wizard (ETH Configuration for 0)
Allocate Memory for Configuration
The configuration block for this module requires 24 bytes of V-Memory. With the options you have chosen, the total size of the configuration is 159 bytes. Please specify a starting address where the configuration will be placed in the Data Block.
The wizard can suggest an address that represents an unused block of V-memory of the correct size.
Suggest Address
VB9000 through VB9158
Industrial Ethernet
<Prev
Next>
Cancel

**8. Creating project components**

If you click on "**Close**", the Ethernet Wizard generates the project components for the set configuration. Among other things, subprograms and the variable memory are created in the data block.

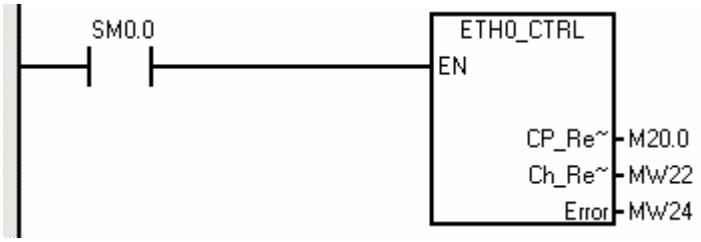

Ethernet Wizard (ETH Configuration for 0)
The Ethernet Wizard will now generate the project components for your selected configuration and make that code available for use by your program. Your requested configuration consists of the following project components:
The module configuration will be placed at (VB9000 - VB9158) in Data Page
Subroutine "ETH0_CTRL"
Subroutine "ETH0_CFG"
Call the initialization and control subroutine "ETH0_CTRL" every scan.
The CP 243-1 module configuration must be downloaded to the PLC before use.
This wizard configuration will be referenced in the project tree by name. You can edit the default name to better identify this wizard configuration.
ETH Configuration for 0
<Prev
Finish
Cancel

**9. Confirm message**

- Click "Yes" to confirm the message that appears.

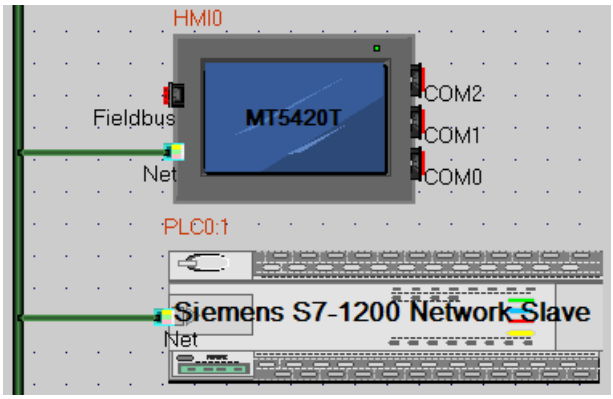
**10. Call ETH0_CTRL**

- In your STEP 7 Micro/WIN program, you must call the ETH0_CTRL subroutine in each cycle.
- Finally, load the entire configuration into the S7-200.

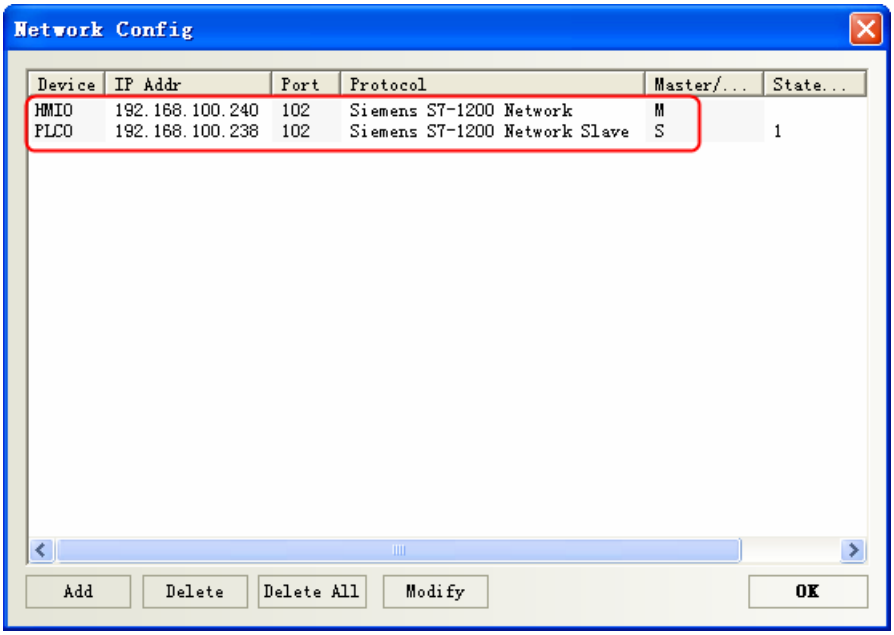



## b. Siemens S7-1200 Network Slave

HMI

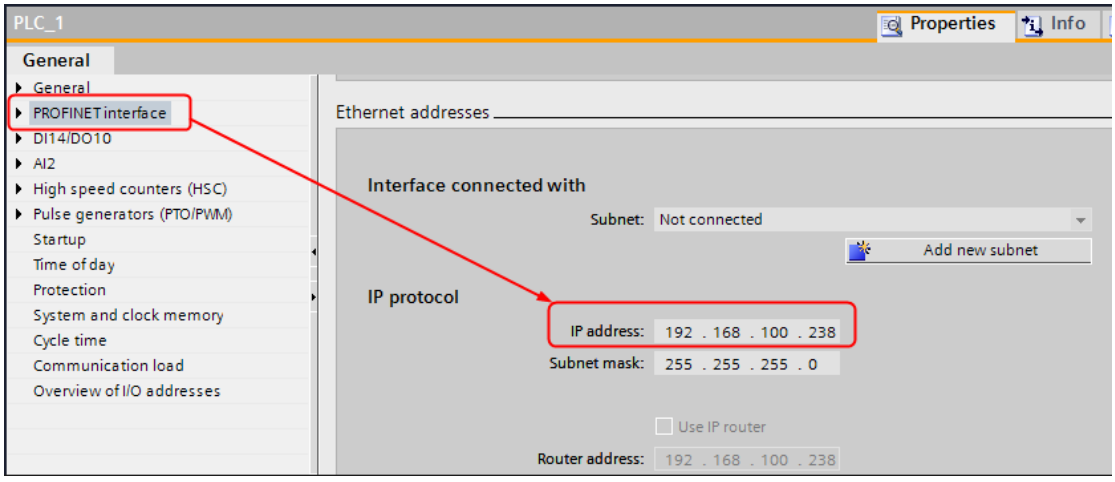



Network configuration

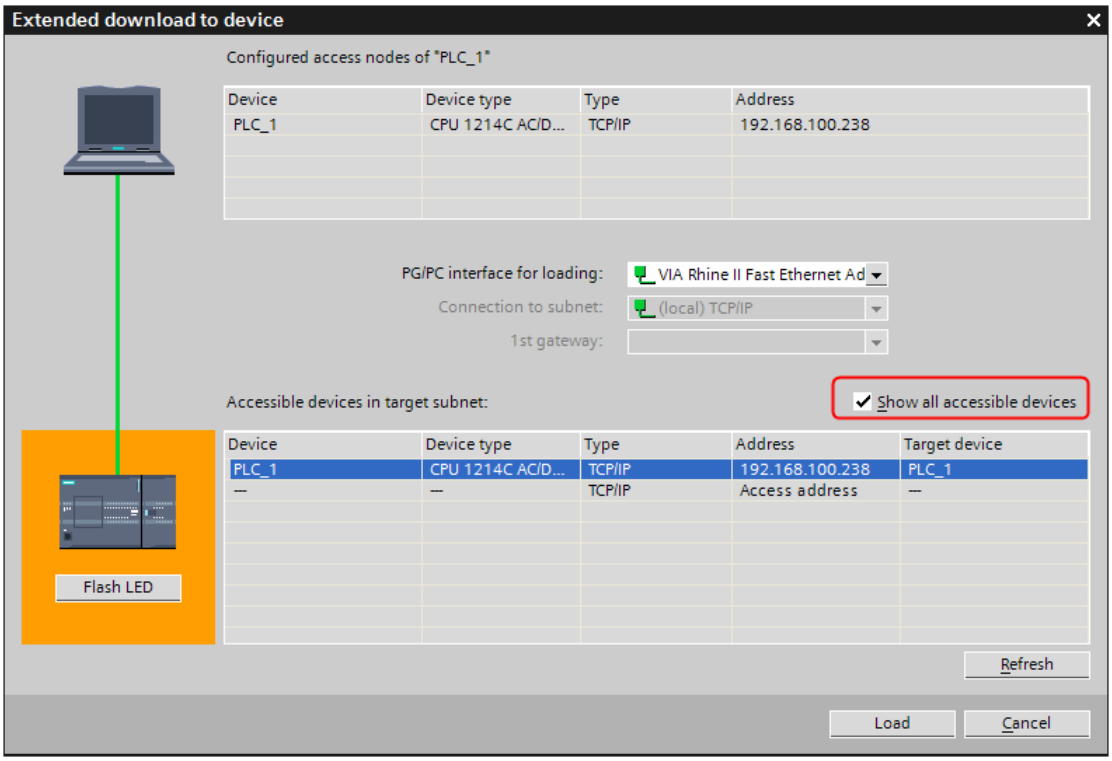



PLC configuration

1. Setting IP in “General”→“Profinet interface”



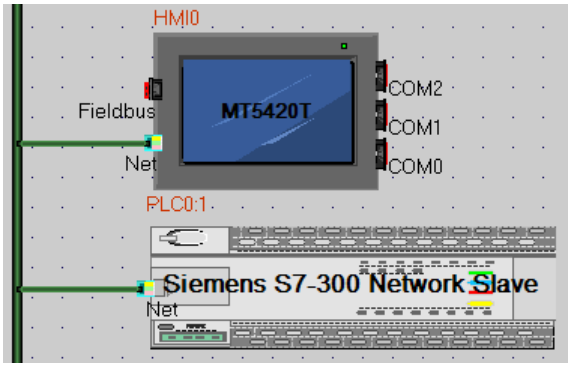

2. After configuration, download device. Download in the first time, select the "Extended download to device", in the dialog to select show all accessible devices.



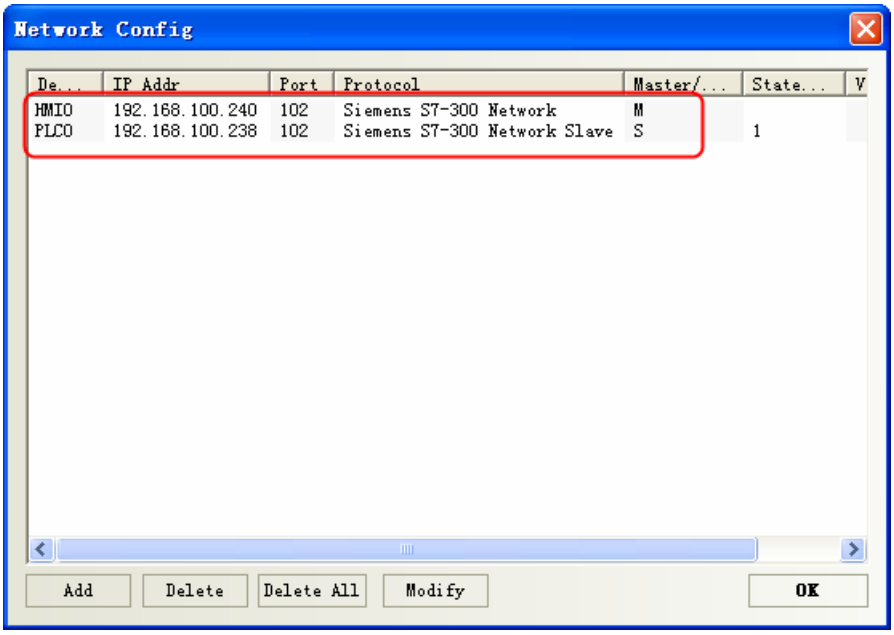

3. Select the device, press "Load".

### c. Siemens S7-300 Network Slave

HMI

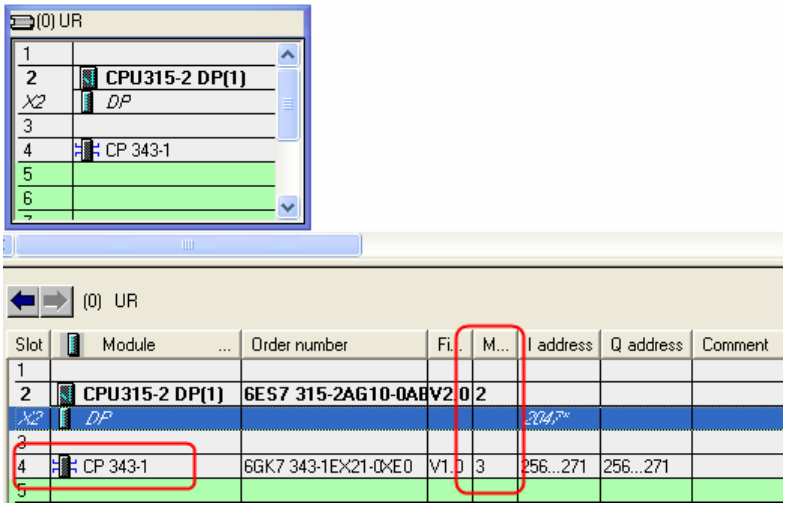



Network configuration

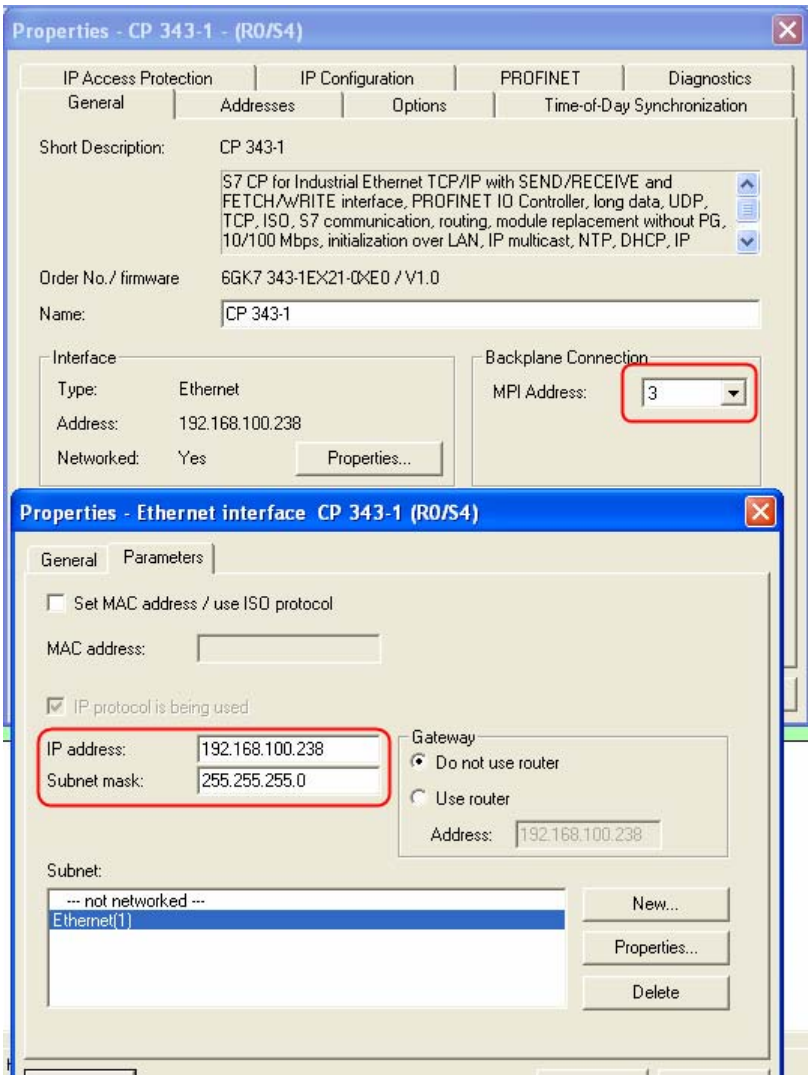



PLC configuration

1. In “HW configuration” insert CP300 industrial Ethernet.




2. Set IP address in the Properties of CP343-1.




3. After HW configuration, download.

# Supported Device

## S7-200

| Device | Bit Address | Word Address | Format |
|---|---|---|---|
| SCR | S.B0.0-255.7 | ------ | DDD.O |
| Special memory Relay | SM.B0-4399.7 | ------ | DDDD.O |
| Counter Relay | Cnt0-255 | ------ | DDD.O |
| Timer Relay | Tim0-255 | ------ | DDD.O |
| V Relay | V.B0.0-32768.7 | ------ | DDDDD.O |
| Internal Memory Relay | M.B0.0-32768.7 | ------ | DDDDD.O |
| Discrete outputs and image Relay | Q.B0.0-32768.7 | ------ | DDDDD.O |
| Discrete inputs and image Relay | I.B0.0-32768.7 | ------ | DDDDD.O |
| Analog Outputs | ------ | AQW0-62 | DD |
| Analog Inputs | ------ | AIW0-62 | DD |

| | | | |
|---|---|---|---|
| SCR double word | ------ | SD0-28 | DD |
| SCR | ------ | SW0-30 | DD |
| Special memory double word | ------ | SMD0-546 | DDD |
| Special memory | ------ | SMW0-548 | DDD |
| Internal memory double word | ------ | MD0-28 | DD |
| Internal memory | ------ | MW0-30 | DD |
| Discrete outputs and image register double word | ------ | QD0-12 | DD |
| Discrete outputs and image register | ------ | QW0-14 | DD |
| Discrete inputs and image register double word | ------ | ID0-12 | DD |
| Discrete inputs and image register | ------ | IW0-14 | DD |
| Timer（Current Value） | ------ | Cnt0-255 | DDD |
| Counter（Current Value） | ------ | Tim0-255 | DDD |
| V memory double word | ------ | VD0-10238 | DDDDD |
| V memory | ------ | VW0-10238 | DDDDD |

**Note：** VW、VD address must be an even number

## S7-200 ethernet communication protocol

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| V Relay | V.B 0.0-8191.7 | ------ | DDDD.O | |
| Internal Memory Relay | M.B 0.0-31.7 | ------ | DD.O | |
| Discrete outputs and image Relay | Q.B 0.0-15.7 | ------ | DD.O | |
| Discrete inputs and image Relay | I.B 0.0-15.7 | ------ | DD.O | |
| Internal memory double word | ------ | MD 0-28 | DD | |
| Internal memory | ------ | MW 0-30 | DD | |
| Discrete outputs and image register double word | ------ | QD 0-12 | DD | |
| Discrete outputs and image register | ------ | QW 0-14 | DD | |
| Discrete inputs and image register double word | ------ | ID 0-12 | DD | |
| Discrete inputs and image register | ------ | IW 0-14 | DD | |
| V memory double word | ------ | VD 0-8188 | DDDD | |
| V memory | ------ | VW 0-8190 | DDDD | |

## Siemens S7-300/400 (PC Adapter) driver protocol

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| External Input node | I 0.0~127.7 | ------ | DDDD.O | |
| External Output node | Q 0.0~127.7 | ------ | DDDD.O | |
| Internal assistant node | M 0.0~2047.7 | ------ | DDDD.O | |
| Data Register Relay node | DBm.DBX 0~8192.7 | ------ | DDDD.O | m 10-60 |
| Data Register Relay | ------ | DBm.DBW 0-8192 | DDDDD | m 10-60 |

| | | | | |
|---|---|---|---|---|
| Data Register Relay (32 bit) | ------ | DBm.DBD 0-8192 | DDDDD | m 10-60 |
| Internal Relay | ------ | MW 0~2046 | DDDD | |
| Internal Relay (32 bit) | ------ | MD 0~2044 | DDDD | |
| External Output Relay | ------ | QW 0~126 | DDD | |
| External Output Relay (32 bit) | ------ | QD 0~124 | DDD | |
| External Input Relay | ------ | IW 0~126 | DDD | |
| External Input Relay (32 bit) | ------ | ID 0~124 | DDD | |

## Siemens S7-300/400 (via MPI port) driver protocol

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| External Input node | I 0.0~127.7 | ------ | DDDD.O | |
| External Output node | Q 0.0~127.7 | ------ | DDDD.O | |
| Internal assistant node | M 0.0~2047.7 | ------ | DDDD.O | |
| Data Register Relay node | DBm.DBX 0.0~65533.7 | ------ | DDDDD.O | m 1-60 |
| Data Register Relay node | DBn.DBX 100000.0~409665535.7 | ------ | DDDDD.O | n 1-4096 |
| Counter | ------ | C 0~255 | DDD | R |
| Timer | ------ | T 0~255 | DDD | |
| Internal Relay | ------ | MW 0~2046 | DDDD | |
| External Output Relay | ------ | QW 0~126 | DDD | |
| External Input Relay | ------ | IW 0~126 | DDD | |
| Internal Relay | ------ | MD 0~8188 | DDDD | |
| External Output Relay | ------ | QD 0~252 | DDD | |
| External Input Relay | ------ | ID 0~252 | DDD | |
| Data Register Relay | ------ | DBm.DBW 0~65532 | DDDDD | m 1-60 |
| Data Register Relay (32 bit) | ------ | DBm.DBD 0~65532 | DDDDD | m 1-60 |
| Data Register Relay | ------ | DBn_DBW 100000-409665534 | DDDDDDDDD | n 1-4096 |
| Data Register Relay (32 bit) | ------ | DBn_DBD 100000-409665532 | DDDDDDDDD | n 1-4096 |

Note: DBn_DBX, DBn_DBW, DBn_DBD is a custom block. First three data formats for data block number, the address after the five, less than five former address zeros. To DB20.DBX23.4 example, Kinco HMIware software addresses to DBn_DBX: 2000023.4

## S7-1200 ethernet protocol

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| External Input node | I 0.0~127.7 | ------ | DDDD.O | |

| | | | | |
|---|---|---|---|---|
| External Output node | Q 0.0~127.7 | ------ | DDDD.O | |
| Internal assistant node | M 0.0~2047.7 | ------ | DDDD.O | |
| Data Register Relay node | DBn_DBX 100000.0~25565535.7 | ------ | DDDDDDDD.O | |
| Data Register Relay node | DBm_DBX 0.0~65535.7 | ------ | DDDDD.O | m 1-10 |
| Data Register Relay | ------ | DBn_DBW 100000-25565534 | DDDDDDDD | |
| Data Register Relay (32 bit) | ------ | DBn_DBD 100000-25565532 | DDDDDDDD | |
| Data Register Relay | ------ | DBm_DBW 0-65534 | DDDDD | m 1-10 |
| Data Register Relay (32 bit) | ------ | DBm_DBD 0-65532 | DDDDD | |
| Internal Relay | ------ | MW 0~2046 | DDDD | |
| Internal Relay (32 bit) | ------ | MD 0~2044 | DDDD | |
| External Output Relay | ------ | QW 0~126 | DDD | |
| External Output Relay (32 bit) | ------ | QD 0~124 | DDD | |
| External Input Relay | ------ | IW 0~126 | DDD | |
| External Input Relay (32 bit) | ------ | ID 0~124 | DDD | |

Note: 1. Kinco HMIware in the DB register corresponds to the definition of S7-1200 software, the absolute address of DB, rather than the global symbol DB.

2. DBn_DBX, DBn_DBW, DBn_DBD is a custom block. First three data formats for data block number, the address after the five, less than five former address zeros. To DB20.DBX23.4 example, Kinco HMIware software addresses to DBn_DBX: 2000023.4

**S7-300 ethernet protocol**

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| External Input node | I 0.0~127.7 | ------ | DDDD.O | |
| External Output node | Q 0.0~127.7 | ------ | DDDD.O | |
| Internal assistant node | M 0.0~2047.7 | ------ | DDDD.O | |
| Data Register Relay node | DBn_DBX 100000.0~25565535.7 | ------ | DDDDDDDD.O | |
| Data Register Relay node | DBm_DBX 0.0~65535.7 | ------ | DDDDD.O | m 1-10 |
| Data Register Relay | ------ | DBn_DBW 100000-25565534 | DDDDDDDD | |
| Data Register Relay (32 bit) | ------ | DBn_DBD 100000-25565532 | DDDDDDDD | |
| Data Register Relay | ------ | DBm_DBW 0-65534 | DDDDD | m 1-10 |

| | | | | |
|---|---|---|---|---|
| Data Register Relay (32 bit) | ------ | DBm_DBD<br>0-65532 | DDDDD | |
| Internal Relay | ------ | MW 0~2046 | DDDD | |
| Internal Relay (32 bit) | ------ | MD 0~2044 | DDDD | |
| External Output Relay | ------ | QW 0~126 | DDD | |
| External Output Relay (32 bit) | ------ | QD 0~124 | DDD | |
| External Input Relay | ------ | IW 0~126 | DDD | |
| External Input Relay (32 bit) | ------ | ID 0~124 | DDD | |

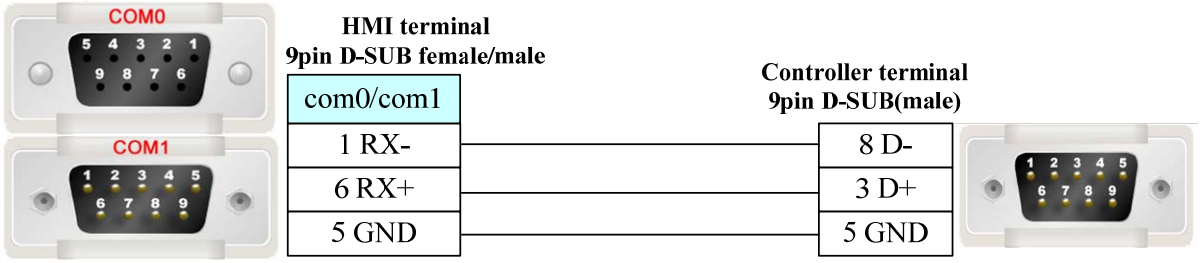
Note: DBn_DBX, DBn_DBW, DBn_DBD is a custom block. First three data formats for data block number, the address after the five, less than five former address zeros. To DB20.DBX23.4 example, Kinco HMIware software addresses to DBn_DBX: 2000023.4

## Cable Diagram

### S7-200 series RS232 communication

Adapter cable by Eview Corporation direct connected with HMI is RS232 communication

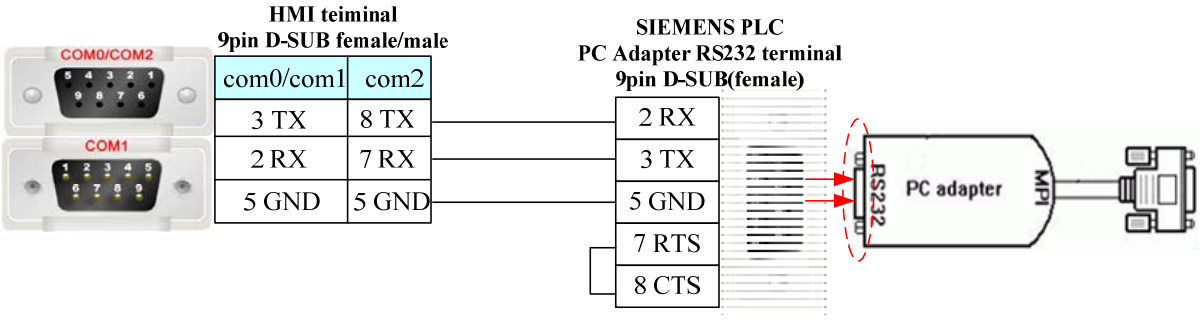
### S7-200 series RS485 communication



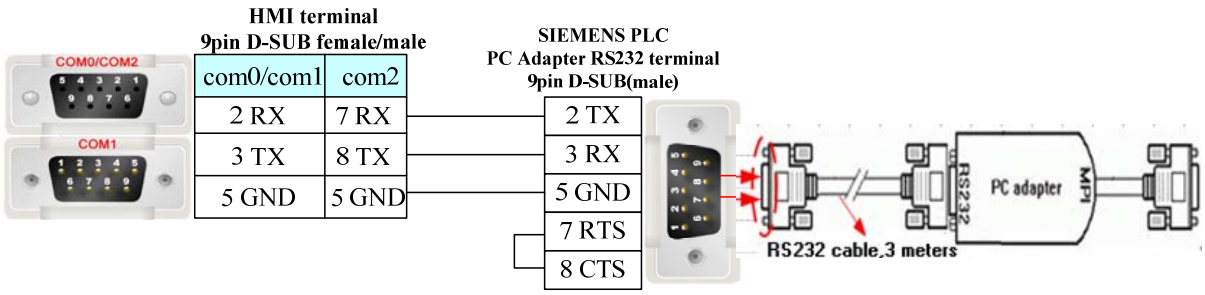

### Siemens S7-300/400 (PC Adapter) RS232 communication

1. MPI cable by Siemens

Need to add a communication cable in adapter RS232 terminal



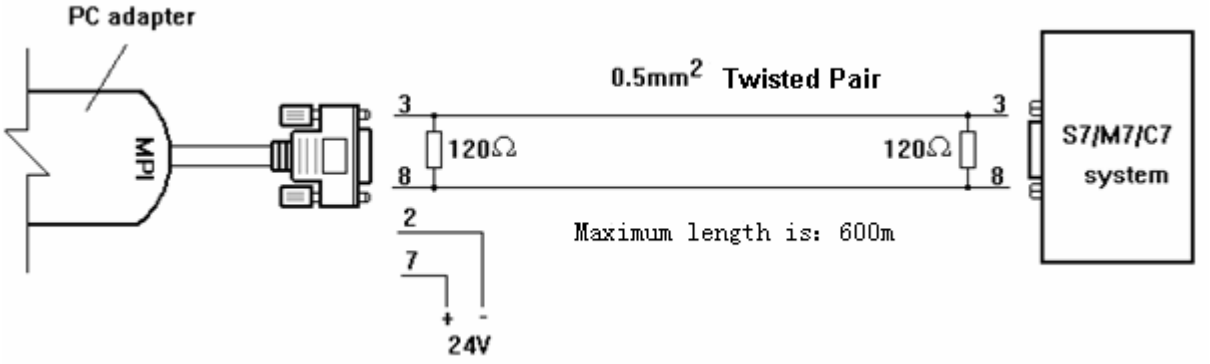

If the PC Adapter with the following RS232 cable, it must add a connection line for communicating with touch-screen




2. Long distance communication with MPI adapter:

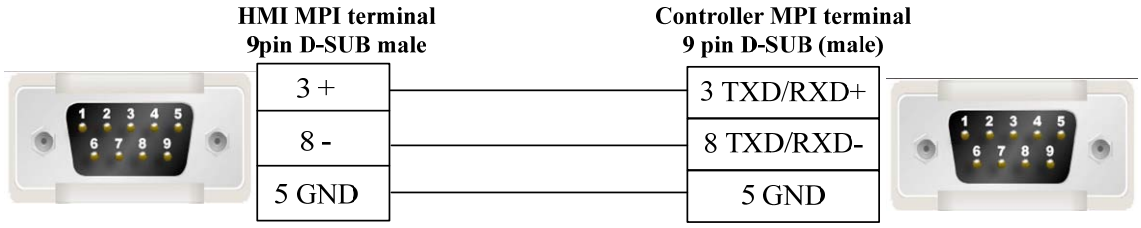
Extend the RS485 port:

The cable length must be 600m or less in the 187.5k ,the 7 pin and 2 pin must connect with 24v power in the port of RS485, the 8 pin and 3 pin must connect with 120 Ω terminal resistance.




3. MPI MT5-S7-300 Adapter by Eview Corporation direct connected with HMI is RS232 communication

## Siemens S7-300/400 (via MPI port) RS485 communication




## Ethernet communication protocol cable

Connecting PC and HMI use cross-ruling; use Cross-over cable or cross-ruling via hub or switch.

a. cross-ruling cable diagram:

| HMI Ethernet terminal RJ45 | Controller terminal RJ45 |
|---|---|
| 1 TX+ (orange,white) | 3 RX+ （green,white） |
| 2 TX- （orange) | 6 RX- （green） |
| 3 RX+ (green,white) | 1 TX+（orange,white） |
| 4 BD4+ (blue) | 4 BD4+（blue） |
| 5 BD4- (blue,white) | 5 BD4- （blue,white） |
| 6 RX- (green) | 2 TX- （orange） |
| 7 BD3+ (brown,white) | 7 BD3+ (brown,white) |
| 8 BD3- (brown) | 8 BD3- （brown） |

b. cross-over cable cable diagram:

| HMI Ethernet terminal RJ45 | Ethernet Hub or Switch RJ45 |
|---|---|
| 1 TX+ (orange,white) | 1 RX+（orange,white） |
| 2 TX- ( orange) | 2 RX- （orange） |
| 3 RX+ (green,white) | 3 TX+ （green,white） |
| 4 BD4+ (bule) | 4 BD4+ （bule） |
| 5 BD4- (bule,white) | 5 BD4- （bule,white） |
| 6 RX- (green) | 6 TX- （green） |
| 7 BD3+ (brown,white) | 7 BD3（brown,white） |
| 8 BD3- (brown) | 8 BD3- （brown） |

## 6.65 TAIAN

### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| Taian | TOP3-30HR-A | RS232 on the CPU unit | Taian |
| | | RS485 on the CPU unit | |

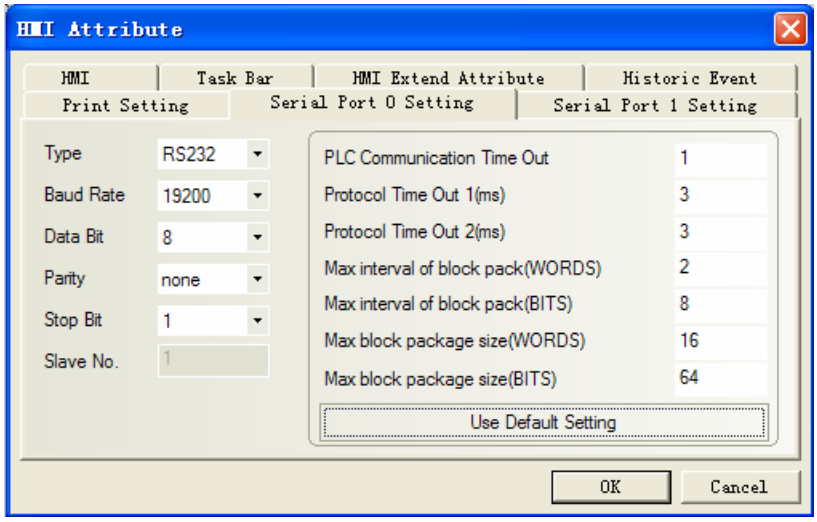
### System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| Taian | TOP3-30HR-A | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 on the CPU unit | RS485 | Setting | Your owner cable |

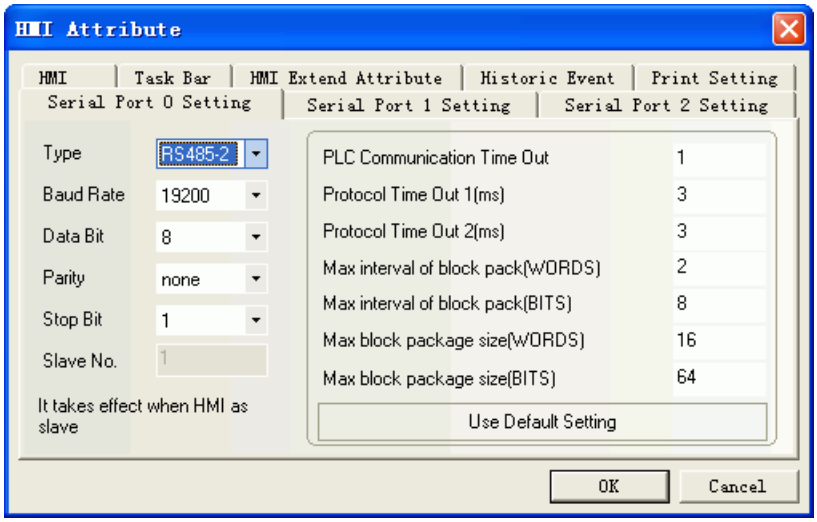
### Communication Setting

**Default communication:** 19200, 8, none, 1; station: 1

**RS232**




**RS485**




## Supported Device

| Device | Bit Address | Word Address | Format |
|---|---|---|---|
| Input Relay（receive external switch signal） | X0-377 | ------ | OOO |
| Output Relay | Y0-377 | ------ | OOO |
| Auxiliary Relay | M（0-7679）& (8000-8511） | ------ | DDDD |
| Step Relay | S0-4096 | ------ | DDDD |
| Timer Relay | T0-511 | ------ | DDD |
| Counter Relay | C0-255 | ------ | DDD |
| Data Register | ------ | D0-8511 | DDDD |
| Data Register | ------ | Z0-15 | DD |
| Data Register | ------ | V0-15 | DD |
| Timer(Current value） | ------ | T_Current_Word 0-511 | DDD |
| Counter(Current value） | ------ | C_Current_Word 0-199 | DDD |

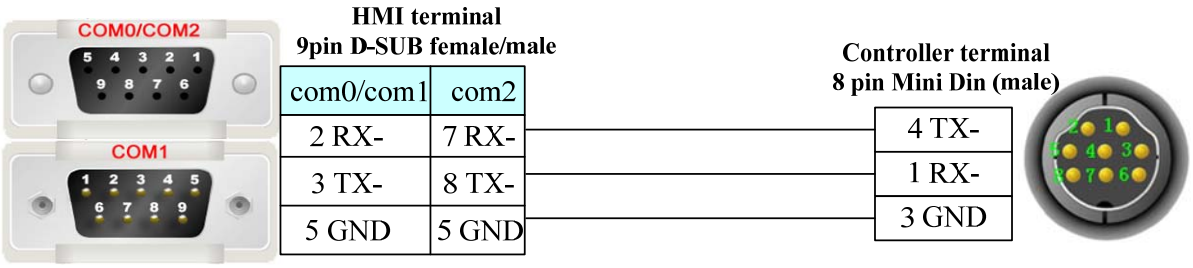
| | | | |
|---|---|---|---|
| Counter | ------ | C_Current_Double 200-255 | DDD |
| Timer(Preset value) | ------ | T_Preset_Word 0-511 | DDD |
| Counter(Preset value) | ------ | C_Preset_Word 0-199 | DDD |
| Counter | ------ | C_Preset_Double 200-255 | DDD |

**Note：**

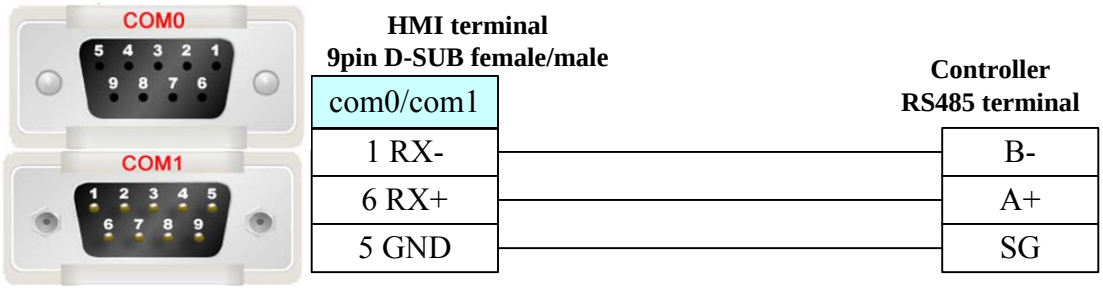
Z, V is the turn of the write and read out. When testing a single word, max interval of word block pack and max word block package size are changed to 1.

## Cable Diagram

### TOP3-30HR-A RS232 communication cable




### TOP3-30HR-A RS485 communication cable




# 6.66 TMCM_303

## Serial Communication

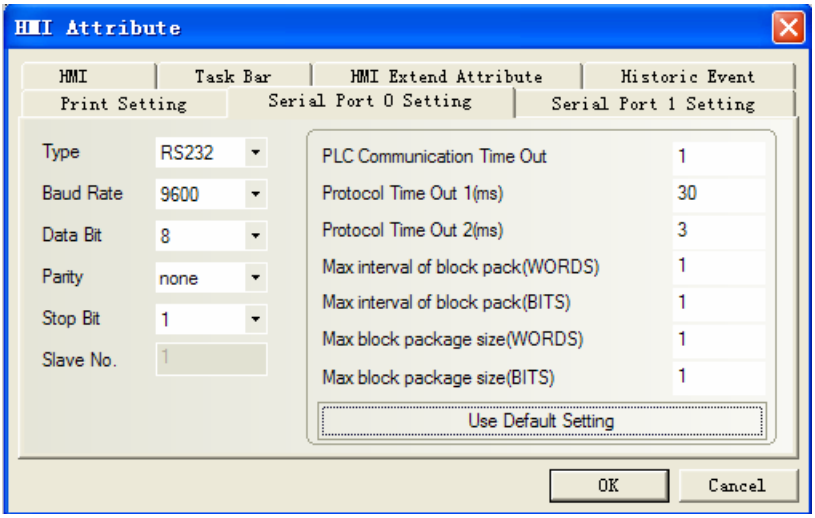
| Series | CPU | Link Module | Driver |
|---|---|---|---|
| TMCM_303 | | RS232 on the CPU unit | TMCM_303 |

## System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| TMCM_303 | | RS232 on the CPU unit | RS232 | Setting | Your owner cable |

## Communication Setting

**Default communication:** 9600, 8, none, 1; station: 1




## Supported Device

Please refer to TMCL Reference Manual for device details

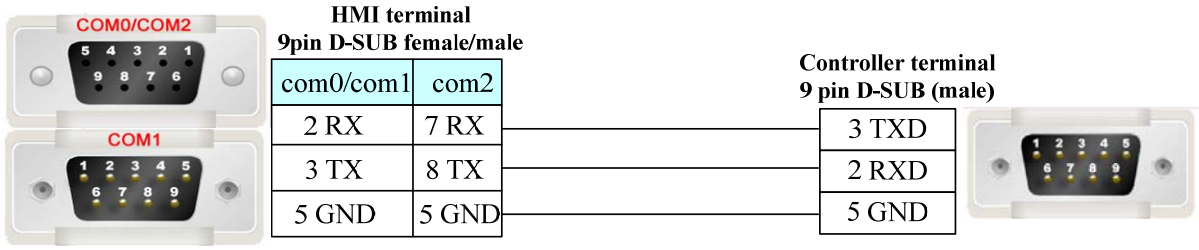
**TMCM_303**

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| ROR | ------ | 0-2 | D | Write Only |
| ROL | ------ | 0-2 | D | Write Only |
| MST | 0-2 | ------ | D | Write Only |
| MVP | ------ | 0.0-2.7 | DD.D | Write Only |
| SAP | 0.008-0.013<br>1.008-1.013<br>2.008-2.013 | 0.0-2.213 | DDDD.DDD | Write Only |
| GAP | 0.008-0.013<br>1.008-1.013<br>2.008-2.013 | 0.0-2.213 | DDDD.DDD | Read Only |
| STAP | 0.0-2.213 | ------ | DDDD.DDD | Write Only |
| RSAP | 0.0-2.213 | ------ | DDDD.DDD | Write Only |
| SGP | 0.077<br>0.129 | 0.0-0.038<br>0.64-0.81<br>0.128-0.132<br>1.0-1.11<br>2.0-2.19 | DDDD.DDD | Write Only |
| GGP | 0.077<br>0.129 | 0.0-0.038<br>0.64-0.81<br>0.128-0.132<br>1.0-1.11<br>2.0-2.19 | DDDD.DDD | Read Only |

| | | | | |
|---|---|---|---|---|
| RFS | ------ | DWord 0.0-2.2 | DD.D | Write Only |
| SIO | 0-7 | ------ | D | Write Only |
| GIO | 0.0-0.10<br>2.0-2.07 | 1.0-1.7 | DDD.DD | Read Only |
| CALC | ------ | 0-9 | D | Write Only |
| COMP | ------ | 0 | D | Write Only |
| JC | ------ | 0-9 | DD | Write Only |
| JA | ------ | 0 | D | Write Only |
| CSUB | ------ | 0 | D | Write Only |
| RSUB | 0 | ------ | D | Write Only |
| WAIT | ------ | 0.0-4.7 | DD.D | Write Only |
| STOP | 0 | ------ | D | Write Only |

## Cable Diagram

### RS232 Communication Cable




# 6.67 THINGET Controller

## Serial Communication

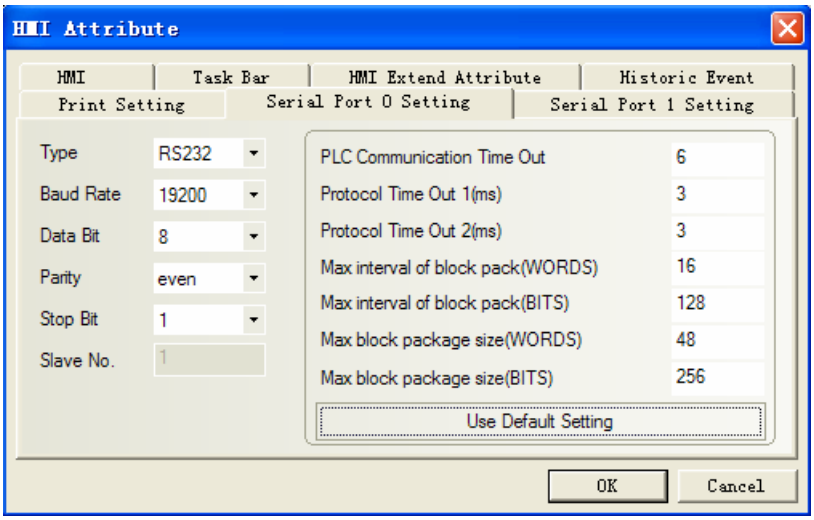
| Series | CPU | Link Module | Driver |
|---|---|---|---|
| THINGET XC | XC3-32R-E | RS232 on the CPU unit | MODBUS RTU |
| | | | THINGET Controller |

## System configuration

| Series | Link Module | COM Type | Parameter | Cable |
|---|---|---|---|---|
| THINGET XC | RS232 on the CPU unit | RS232 | Setting | Your owner cable |

## Communication Setting

**Default communication:** 19200, 8, even, 1; station: 1




## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Internal Relay | M0~M7999 | ------ | DDDDD | |
| Input Relay | X0.0~X51.1 | ------ | OOOOOO.O | |
| Output Relay | Y0.0~Y51.1 | ------ | OOOOOO.O | |
| State Relay | S0~S1023 | ------ | DDDDD | |
| Special Relay | M8000~M8511 | ------ | DDDDD | |
| Timer Relay | T0~T618 | ------ | DDDDD | |
| Counter Relay | C0~C634 | ------ | DDDDD | |
| Data register | ------ | D0~D7999 | DDDDD | |
| Timer | ------ | TD0~TD618 | DDDDD | |
| Counter | ------ | CD0~CD634 | DDDDD | |
| Special Data Register | ------ | D8000~D8511 | DDDDD | |
| FlashROM Register | ------ | FD0~FD5000 | DDDDD | |
| Special FlashROM Register | ------ | FD8000~FD8511 | DDDDD | |

**Note：**

1. **O** indicates **OCT, D** indicates **HEX.**
2. Example: X\Y address: 1 in the controller corresponds with 0.1 in the ev5000; X\Y address: 17 in the controller correspond with 1.7 in the ev5000.

### MODBUS RTU protocol

Register address in programmable controller correspond with address in modbus protocol, as follows:

**Coil Area：**

| bits Addr | MODBUS addr（Decimal K） |
|---|---|
| M0~M7999 | 0X 1~0X 8000 |
| X0~X511 | 0X 16385~0X 16714 |
| Y0~Y511 | 0X 18433~0X 18762 |

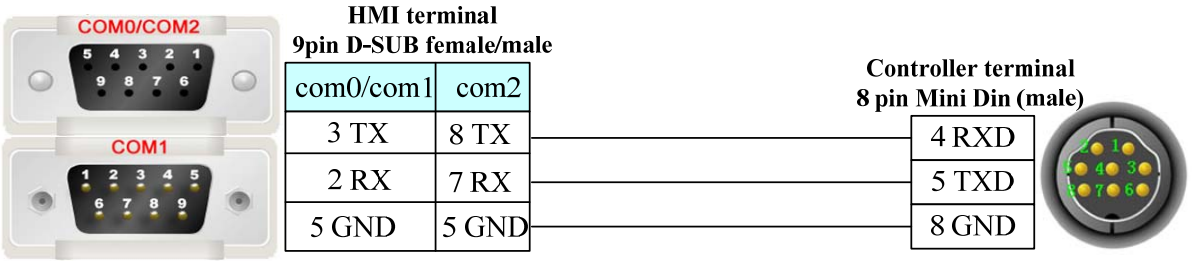
| | |
|---|---|
| S0~S1023 | 0X 20481~0X 21504 |
| M8000~M8511 | 0X 24577~0X 25088 |
| T0~T618 | 0X 25601~0X 26219 |
| C0~C634 | 0X 27649~0X 28283 |

**Register Area：**

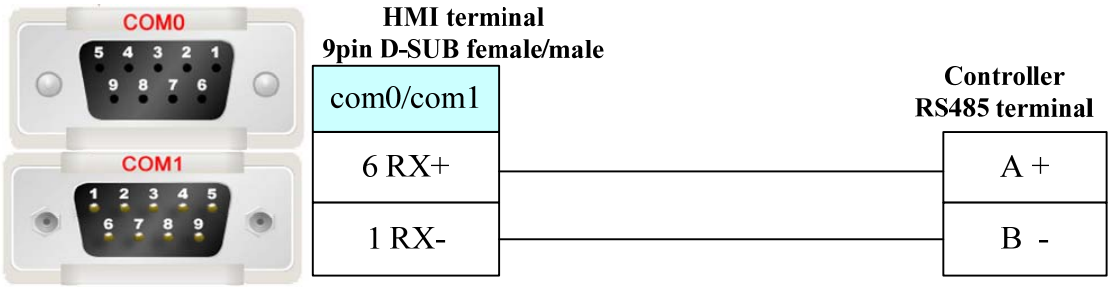
| words Addr | MODBUS addr（Decimal K） |
|---|---|
| D0~D7999 | 4X 1~4X8000 |
| TD0~TD618 | 4X 12289~4X12907 |
| CD0~CD634 | 4X 14337~4X 14971 |
| D8000~D8511 | 4X 16385~4X 16896 |
| FD0~FD1535 | 4X 18433~4X19968 |
| FD8000~FD8511 | 4X 26625~4X 27136 |

## Cable Diagram

### XC3-32R-E RS232 Communication




### XC3-32R-E RS485 Communication




**Note：** A\B pin is on the output port.

# 6.68 Toledo DLoadCell

## Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| D3CellTM | D3CellTM | RS422 on the CPU unit | DLoadCell |

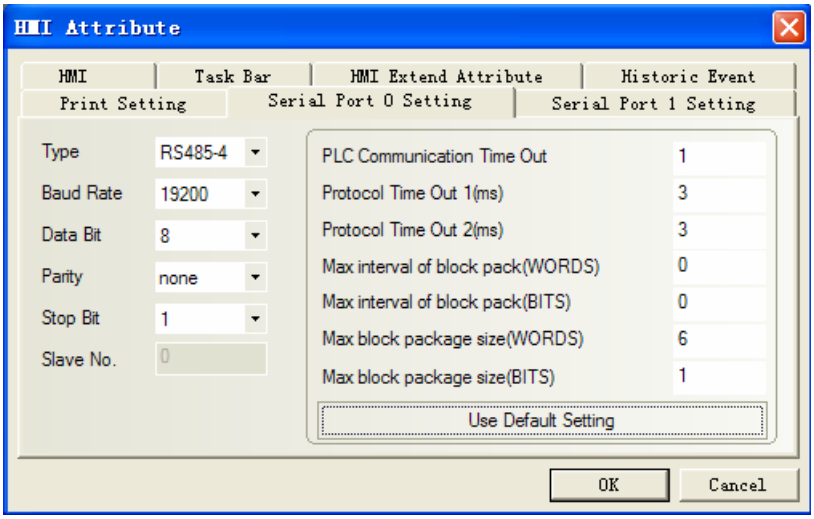
## System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| D3CellTM | D3CellTM | RS485 on the CPU unit | RS422 | Setting | Your owner cable |

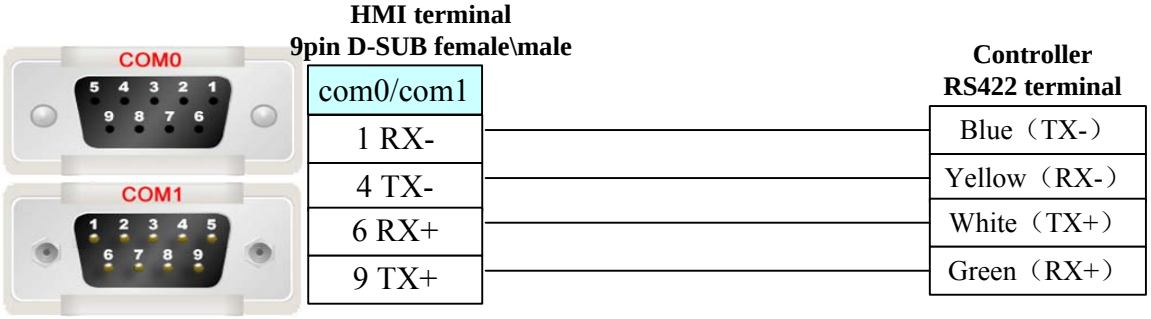
## Supported Device

For detailed device, please refer to the PLC manual.

## Communication Setting




## Cable Diagram




# 6.69 Trio motion controller

## Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| Euro | Euro 205x | RS232 on the CPU unit | TRIO |

| | | | |
|---|---|---|---|
| | | | Modbus RTU Extend |

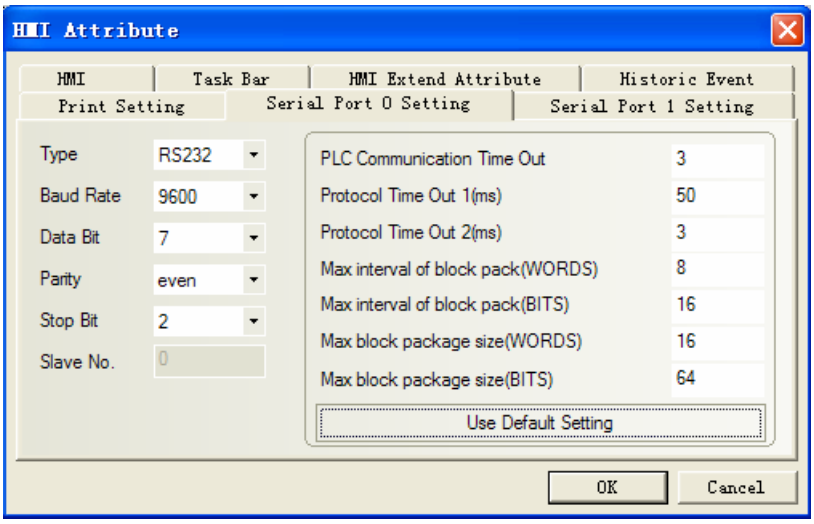
## System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| TRIO | Euro 205x | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 on the CPU unit | RS485-4 | Setting | Your owner cable |
| Modbus RTU Extend | Euro 205x | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 on the CPU unit | RS485-4 | Setting | Your owner cable |

## Communication Setting

**Omron Protocol default communication:** 9600, 7, even, 2; station: 1

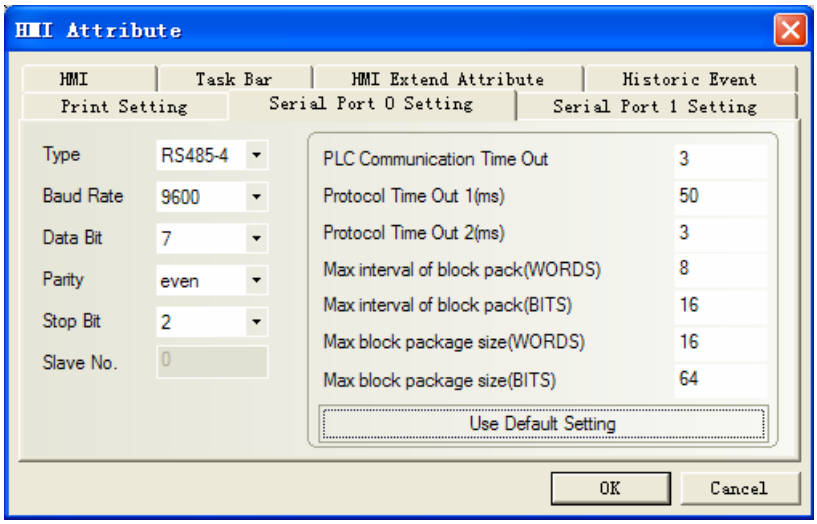
RS232 communication




Controller internal setting:

```
HLS_NODE=1
HLS_MODEL=$FA
SETCOM(9600,7,2,2,1,5)
```

RS485-4 communication

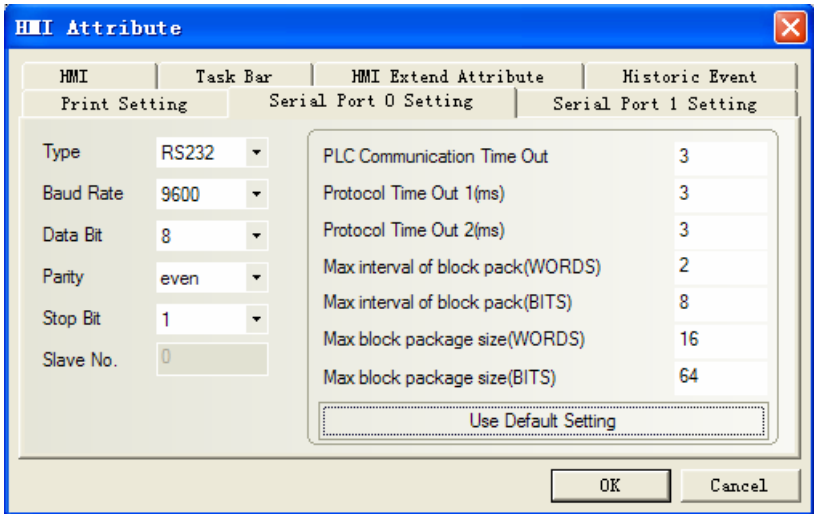



Controller internal setting:

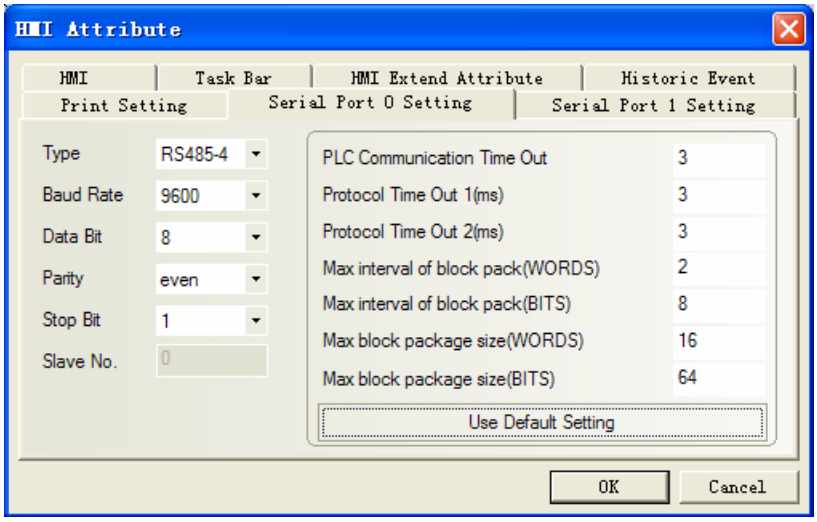
```
HLS_NODE=1
HLS_MODEL=$FA
SETCOM(9600,7,2,2,2,5)
```

**Modbus protocol default communication:** 9600, 8, even, 1; station: 1

RS232 communication




RS485-4 communication




## Trio controller communication settings

Omron protocol:

define Host Link slave node

**HLS_NODE=1**

define Host Link slave mode code

**HLS_MODEL=$FA**

**Set up Host Link slave for port 2**

**Trio controller setting：SETCOM (baudrate, databits, stopbits, parity, port, 5)**

**SETCOM（9600，7，2，2，2，5）**

MC controller unit can communicate with plc terminal after setting the configuration.

**Note：** A is the programming port of controller，B is the communication port.

Modbus Protocol：

address=1

Setcom (9600, 8, 1, 0, 1, 4)

## Supported Device

### TRIO

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| I/O and Internal Auxiliary Relay | IR0.0-1023.15 | ———— | DDDD.DD | |
| Data Memory | ———— | DM0-30000 | DDDDD | |

**Note：**

Address correspondence: IRn.m-->the m Trio VR (n); DMn->Table (n). Example IR1.02 corresponds to the 2nd bit of VR1.

### Modbus RTU Extend

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Data register bit | 4X_bit 0.0-1023.15 | ———— | DDDD.DD | |

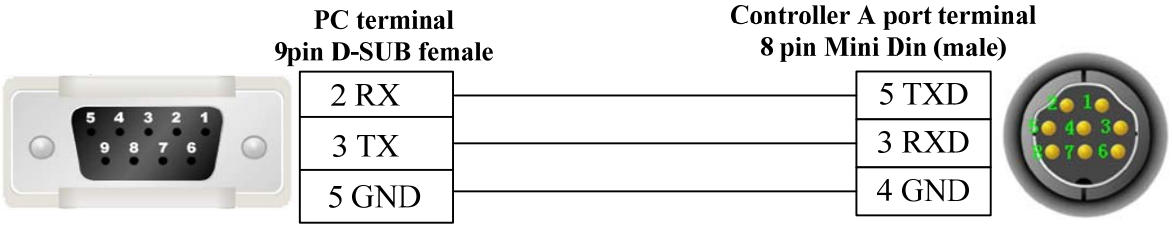
| | | | | |
|---|---|---|---|---|
| Data register | ———— | 4X 0-1023 | DDDDD | |

**Note：**

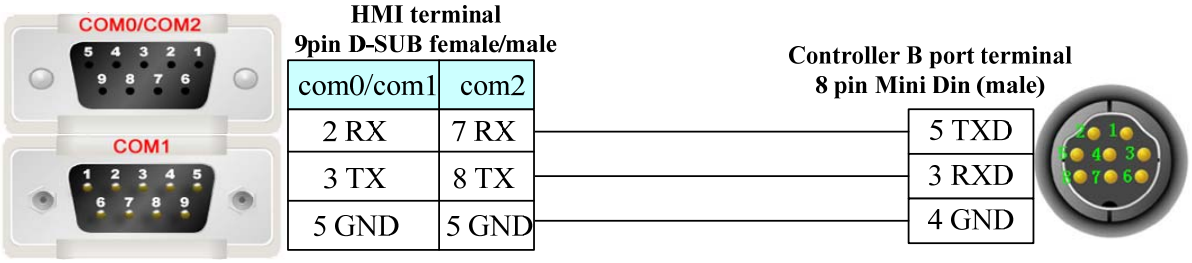
Address correspondence: 4x corresponds to VR; 4x_bit corresponds to VR's bit. Address difference between one position, e.g. 4x (501) corresponds to VR (500); 4x_bit (67.1) corresponds to the first bit of VR (66).

## Cable Diagram

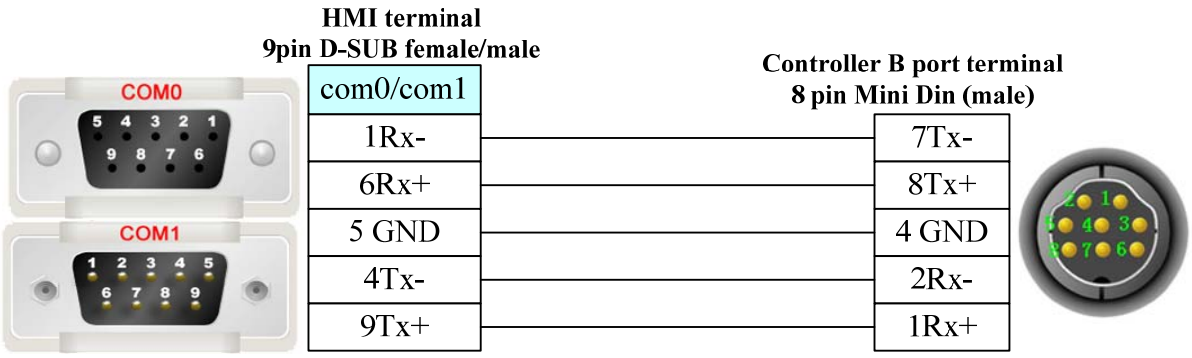
### Programming Cable




### RS232 Communication Cable




### RS422 Communication Cable




## 6.70 Unitronics

### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| Vision 130 | V130-33-B1 | RS232 on the CPU unit | Unitronics |
| | | RS485 on the CPU unit | |

## Network Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| Vision 130 | V130-33-B1 | Ethernet I/F on CPU Unit | Unitronics Ethernet Slave |

## Serial System configuration

| Series | CPU | Link Module | COM Type | Parameter | Cable |
|---|---|---|---|---|---|
| Vision 130 | V130-33-B1 | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS485 on the CPU unit | RS485-2 | Setting | Your owner cable |

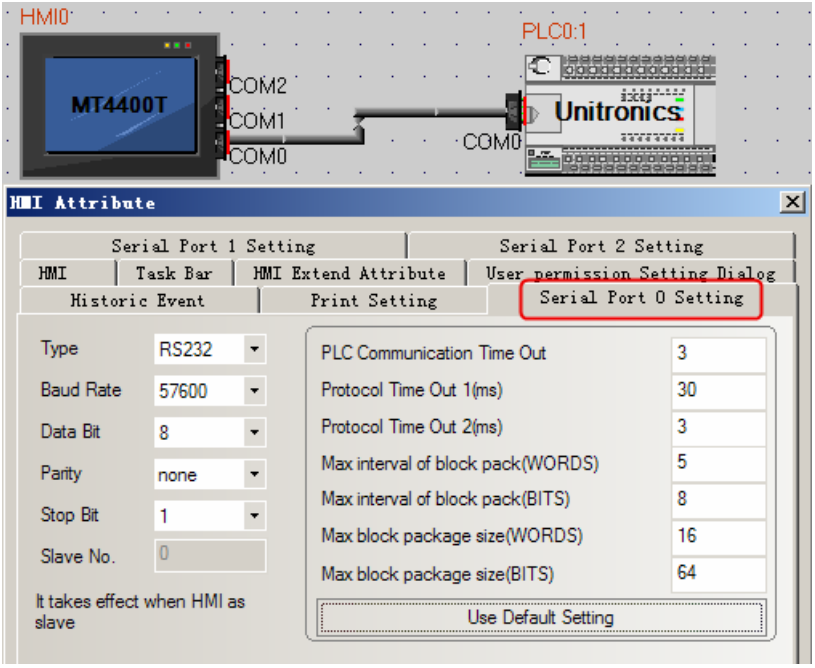
## Network System configuration

| Series | CPU | Link Module | Connect Type | Parameter | Cable |
|---|---|---|---|---|---|
| Vision 130 | V130-33-B1 | Ethernet I/F on CPU Unit | Ethernet | Setting | Your owner cable |

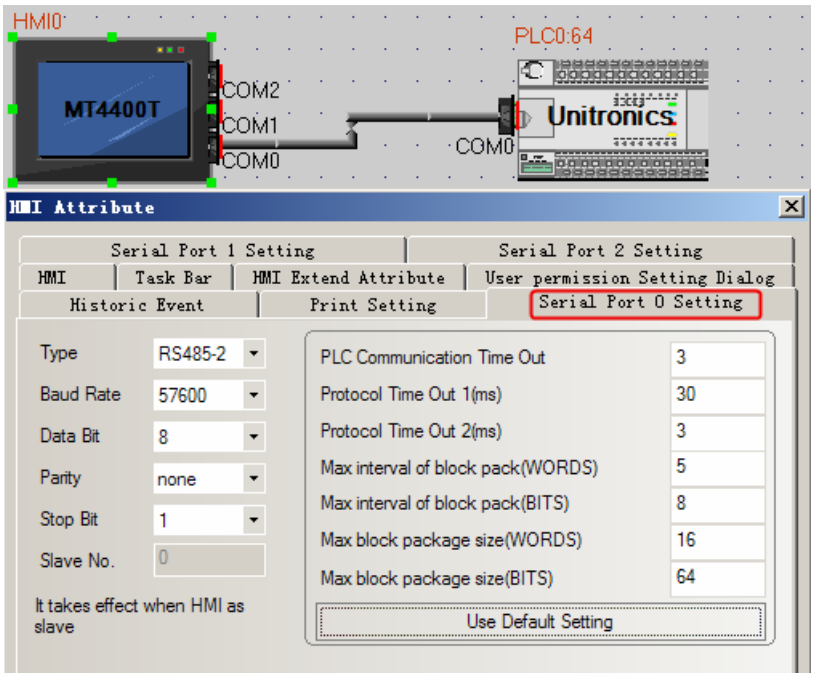
## Serial Communication Setting

### HMI

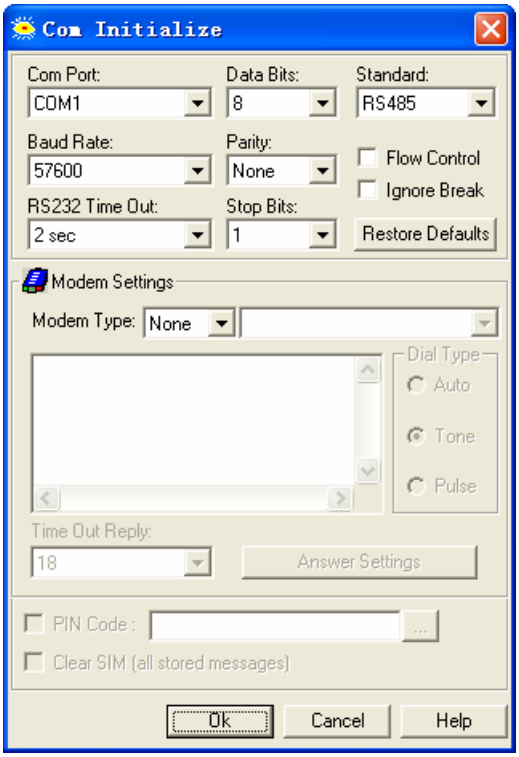
RS232 default communication: 57600, 8, 1, none; station: 1



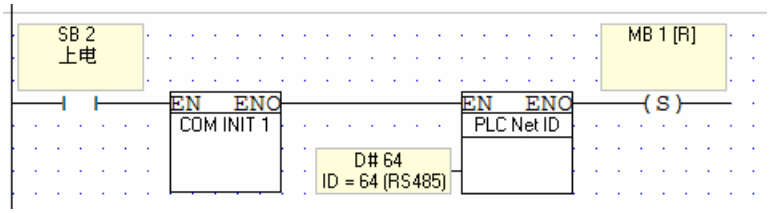

RS485 default communication: 57600, 8, 1, none; station: 64




Note: 1. Com Initialize in the progam software by RS485 communication.



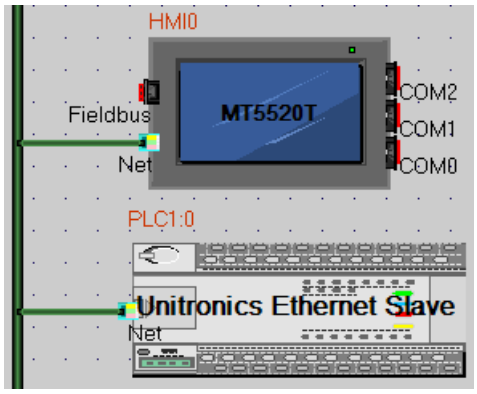

2. Initialize ID, and progarm as below , download to controller.



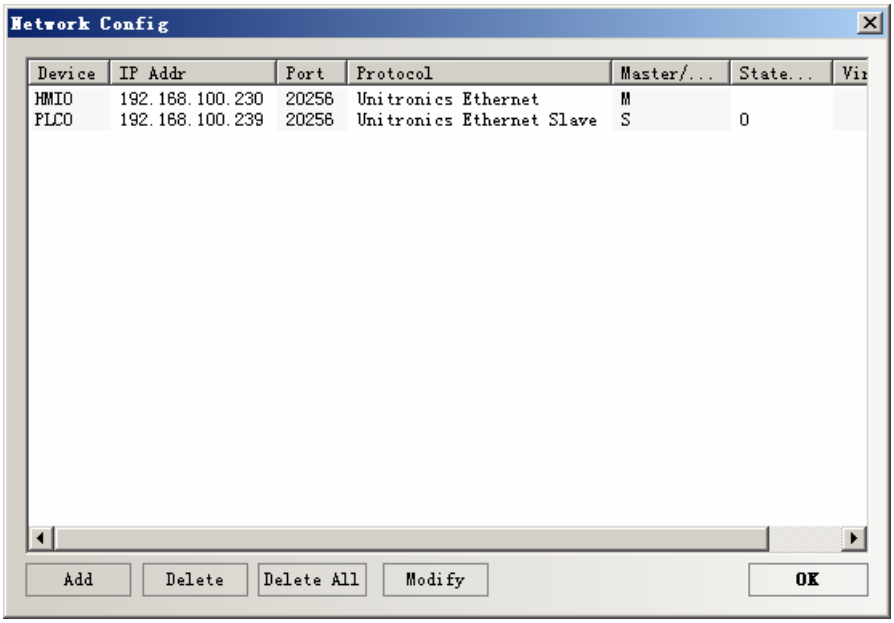

3. Change the jumper position and choose RS485 communication.

## Network Communication Setting

### HMI




### Network configuration



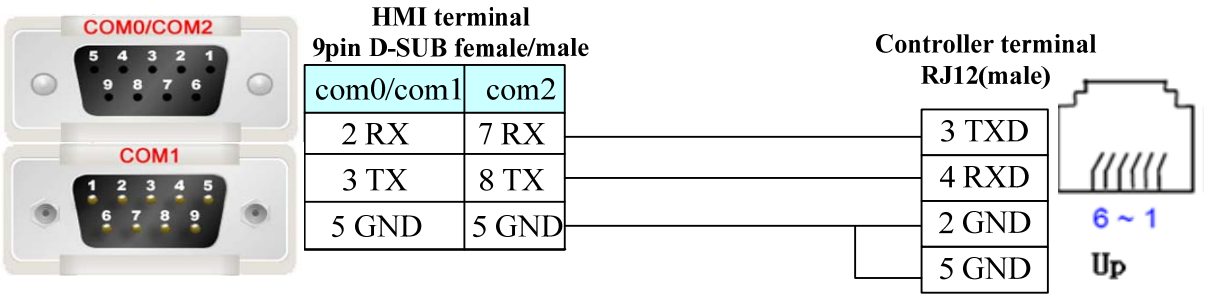

## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Inputs | I 0~999 | ------ | DDD | Read only |
| Outputs | O 0~999 | ------ | DDD | |
| Memory Bits | MB 0~8191 | ------ | DDDD | |
| System Bits | SB 0~999 | ------ | DDD | |
| Timers | T 0~383 | ------ | DDD | Read only |
| Counters | C 0~31 | ------ | DD | Read only |
| Memory Integer | ------ | MI 0~4095 | DDDD | |
| Memory Longer | ------ | ML 0~511 | DDD | |
| Double Word | ------ | DW 0~255 | DDD | |
| Memory Float | ------ | MF 0~63 | DD | |
| System Integer | ------ | SI 0~999 | DDD | |

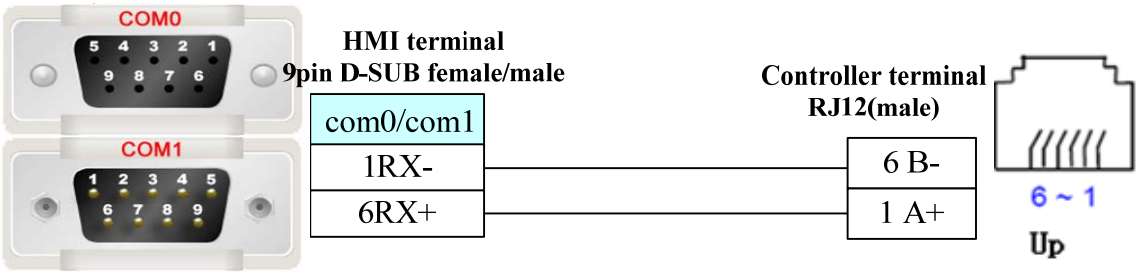
| | | | | |
|---|---|---|---|---|
| System Longer | ------ | SL 0~199 | DDD | |
| System Double Word | ------ | SDW 0~199 | DDD | |
| Timers Preset | ------ | T_C 0~383 | DDD | Read only |
| Timers Current | ------ | T_P 0~383 | DDD | Read only |
| Counters Preset | ------ | C_C 0~31 | DD | Read only |
| Counters Current | ------ | C_P 0~31 | DD | Read only |

## Cable Diagram

**RS232**



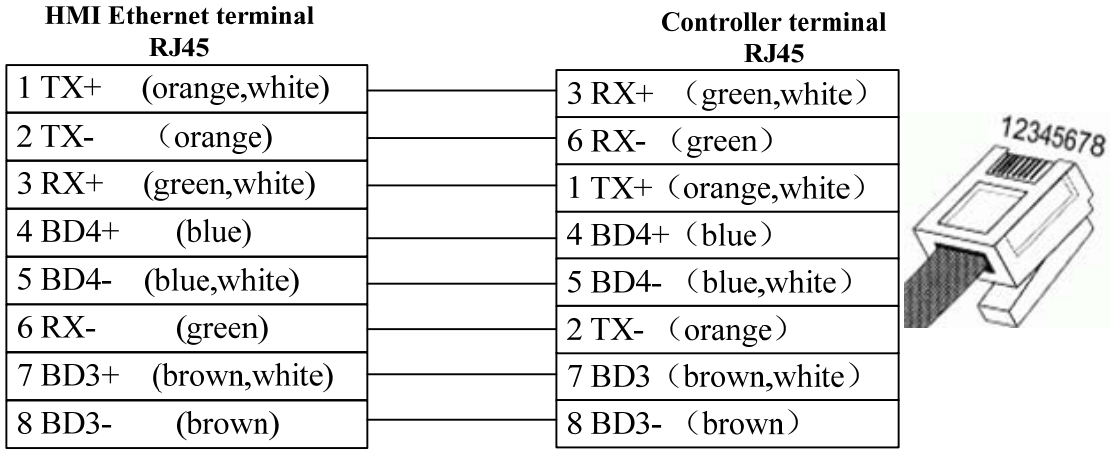

**RS485-2**




### Ethernet communication protocol cable

Cross-connection or crossover network cable can be used as communication cable via the hub or switch

a. Cross-connection cable diagram




b. crossover network cable diagram

| HMI Ethernet terminal RJ45 | Ethernet Hub or Switch RJ45 |
|---|---|
| 1 TX+ (orange,white) | 1 RX+（orange,white） |
| 2 TX- （orange) | 2 RX- （orange） |
| 3 RX+ (green,white) | 3 TX+ （green,white） |
| 4 BD4+ (blue) | 4 BD4+ （blue） |
| 5 BD4- (blue,white) | 5 BD4- （blue,white） |
| 6 RX- (green) | 6 TX- （green） |
| 7 BD3+ (brown,white) | 7 BD3（brown,white） |
| 8 BD3- (brown) | 8 BD3- （brown） |

## 6.71 Universal ASCII Slave

### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| Universal ASCII Slave | Universal ASCII Slave | RS232 on the CPU unit | Universal ASCII Slave |

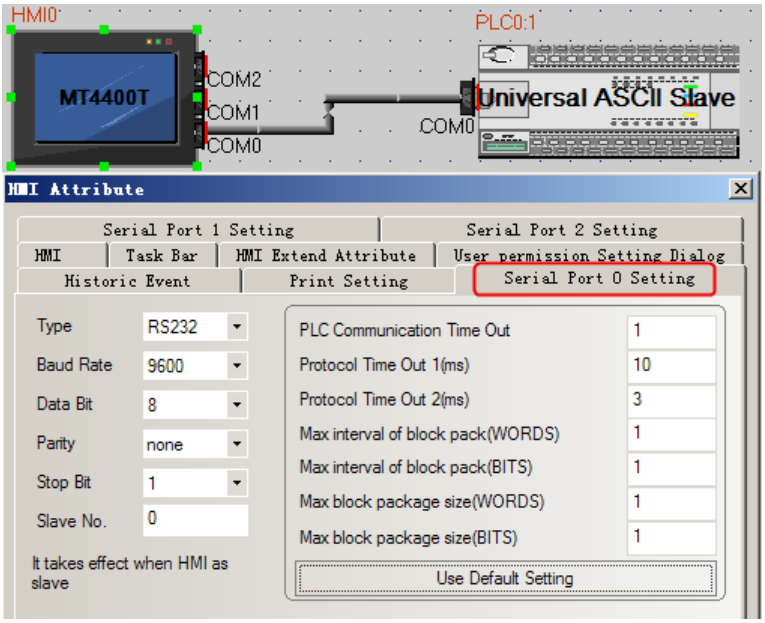
### System configuration

| Series | CPU | Link Module | COM Type | Parameter | Cable |
|---|---|---|---|---|---|
| Universal ASCII Slave | Universal ASCII Slave | RS232 on the CPU unit | RS232 | Setting | Your owner cable |

### Communication Setting

HMI

**RS232 default communication:** 57600, 8, 1, none; station: 1

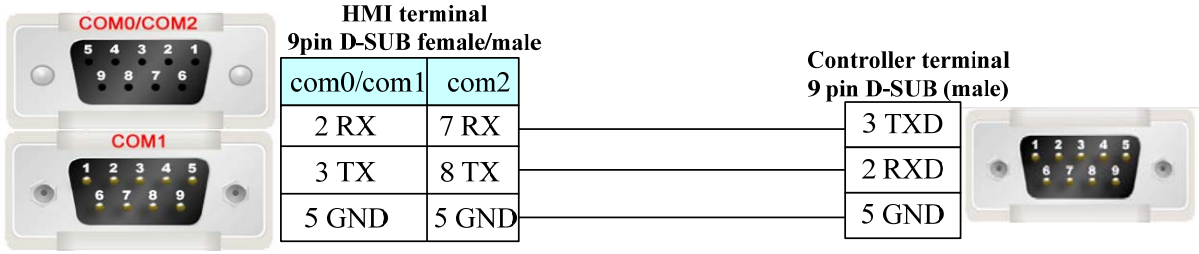



## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| send | LB 0 | ------ | D | |
| clear | LB1 | ------ | D | |
| Send data buffer | ------ | LW 0~99 | DD | |
| Receive data buffer | ------ | LW 100~199 | DDD | |

## Cable Diagram

RS232




# 6.72 Vigor Corporation

## Serial Communication

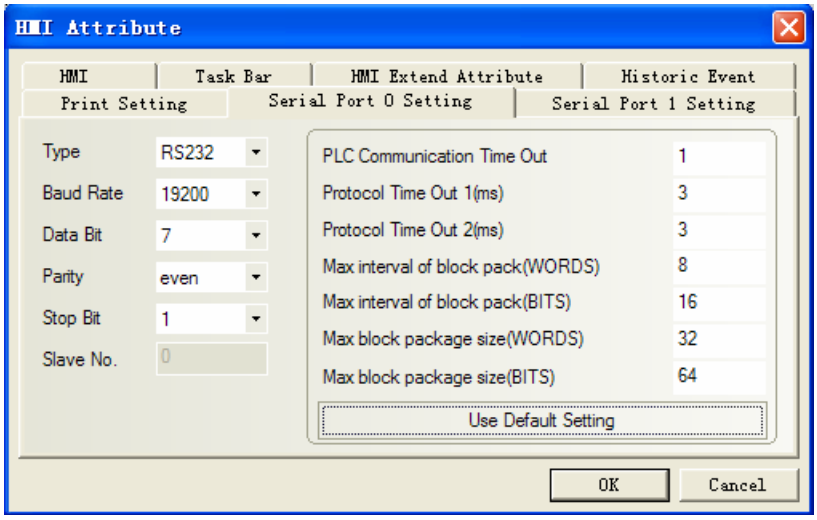
| Series | CPU | Link Module | Driver |
|---|---|---|---|
| VH | VH-14MR | RS232 on the CPU unit | Vigor |
| VB0 | VB0-14MR | RS232 on the CPU unit | |

## System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| VH | VH-14MR | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| VB0 | VB0-14MR | RS232 on the CPU unit | RS232 | Setting | Your owner cable |

## Communication Setting

**Default communication:** 19200, 7, even, 1; station: 0




**Note：** CP1* baudrate 19200bps.

*：CP1 programming port is USB（RS232.

## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Input Relay | X 0-255 | ------ | OOO | |
| Output Relay | Y 0-255 | ------ | OOO | |
| Internal Relay | M 0-5119 | ------ | DDDD | |
| Special Relay | SM 9000-9255 | ------ | DDDD | |
| Timer Relay | T_bit 0-255 | | DDD | |
| Counter Relay | C_bit 0-255 | | DDD | |
| Timer | ------ | T_word 0-255 | DDD | |
| Counter | ------ | C_word 0-199 | DDD | |
| Counter double word | ------ | C_dword 200-255 | DDD | |
| Data Register | ------ | D 0-8191 | DDDD | |
| Special Data Register | ------ | SD 9000－9255 | DDDD | |

## Cable Diagram

### VH-14MR RS232 communication cable

1. Communication via USB programming port

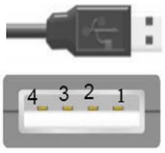
Connection with HMI by programming cable of Vigor

**HMI terminal**
**9pin D-SUB female/male**

| com0/com1 | com2 |
|---|---|
| 3 TX | 8 TX |
| 2 RX | 7 RX |
| 5 GND | 5 GND |

**VIGOR VH PLC**
**USB A interface**

| |
|---|
| 2 D- |
| 3 D+ |
| 4 GND |




2. Communication via auxiliary interface of programming device:

**HMI terminal**
**9pin D-SUB female/male**

| com0/com1 | com2 |
|---|---|
| 3 TX | 8 TX |
| 2 RX | 7 RX |
| 5 GND | 5 GND |

**PLC Auxiliary**
**interfaceJST 4PIN**

| |
|---|
| 3 RXD |
| 2 TXD |
| 1 GND |

**JST 4PIN**

## 6.73 XiLin Inverter

### Serial Communication

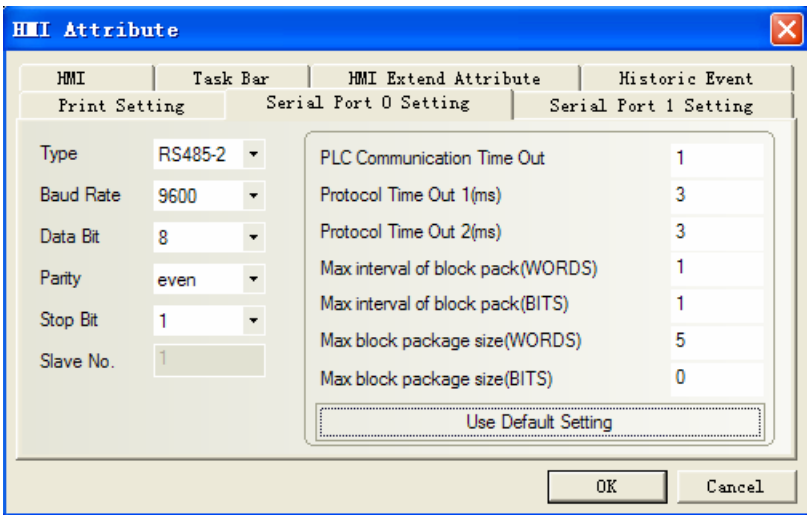
| Series | CPU | Link Module | Driver |
|---|---|---|---|
| XiLin | EH600 | RS485-2 on the CPU unit | XiLin EH600 |

### System configuration

| Series | CPU | Link Module | COM Type | Parameter | Cable |
|---|---|---|---|---|---|
| XiLin | EH600 | RS485-2 on the CPU unit | RS485-2 | Setting | Your owner cable |

### Communication Setting

**RS485-2 Communication:** 9600, 8, even, 1; station: 1



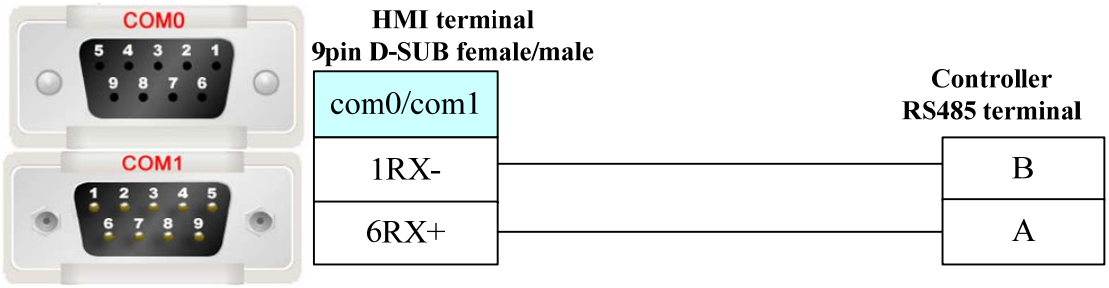

## Supported Device

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Addr communication parameter | ------ | Addr | HHHH | |
| A FWD | ------ | A 0 | D | |
| B REV | ------ | B 0 | D | |
| C FJOG | ------ | C 0 | D | |
| D RJOG | ------ | D 0 | D | |
| E Free halt | ------ | E0 | D | |
| F Slow down | ------ | F 0 | D | |
| G Reset failures | ------ | G 0 | D | |

## Address definition of inverter communication parameter

Please refer to XILIN frequency converter manual for details about device address.

## Cable Diagram



## 6.74 Yamatake Corporation

### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| DCP30 | P30A□□□□□□2□□ | RS485 on the CPU unit | Yamatake DCP30 |
| SDC35/36 | C35□□□□□□2□□<br>C35□□□□□□4□□<br>C36□□□□□□2□□<br>C36□□□□□□4□□ | RS485 on the CPU unit | Yamatake SDC/DMC |
| DMC | DMC10D□□□□□□□ | RS485 on the CPU unit | |
| | DMC10S□□□□□□□ | | |

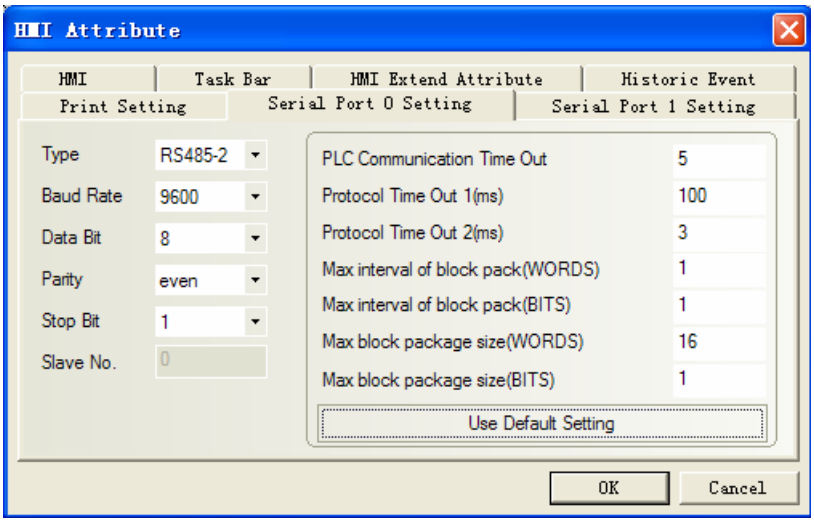
### System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| DCP30 | P30A□□□□□□2□□ | RS485 on the CPU unit | RS485 | Setting | Your owner cable |
| SDC35/36 | C35□□□□□□2□□<br>C35□□□□□□4□□<br>C36□□□□□□2□□<br>C36□□□□□□4□□ | RS485 on the CPU unit | RS485 | Setting | Your owner cable |
| DMC | DMC10D□□□□□□□ | RS485 on the CPU unit | RS485 | Setting | Your owner cable |
| | DMC10S□□□□□□□ | | | | |

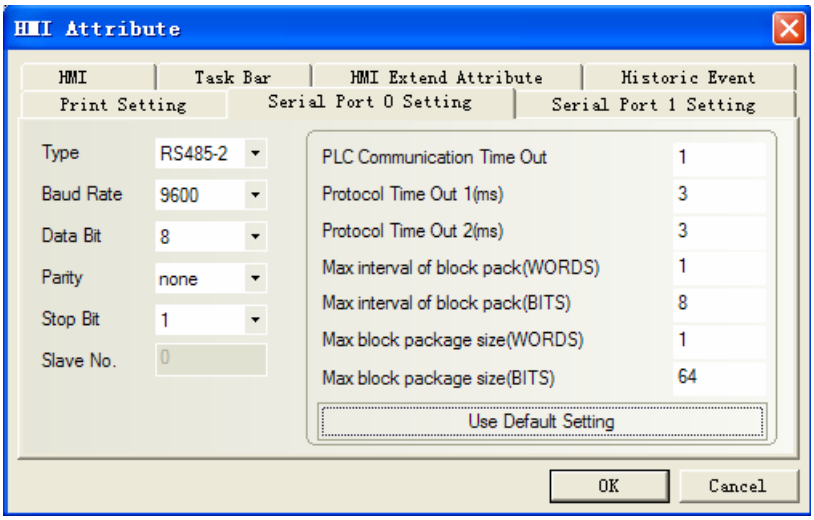
### Communication Setting

#### HMI

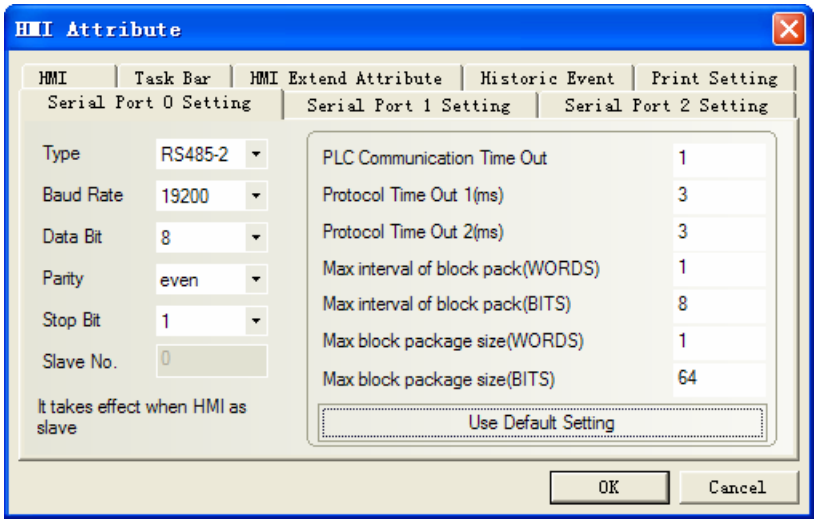
**DC30 RS485 default communication: 9600, 8, even, 1; station: 1**




**SDC36 RS485 default communication: 9600, 8, none, 1; station: 1**

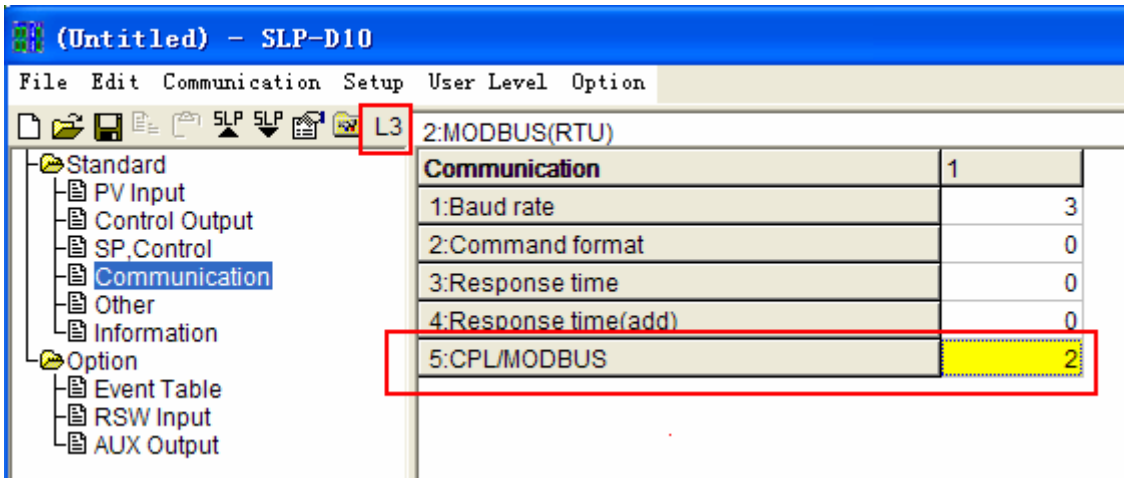



**DMC RS485 default communication: 19200, 8, even, 1; station: 6.**




## PLC Setting

1. Set modbus RTU in the SLP-D10, and then download.




2. Station match with the switch on the device.

## Supported Device

### DCP30

| Device | Bit Address | Word Address（Parameter code） | Format | Notes |
|---|---|---|---|---|
| RUN Status | ------ | 1-26 | DDD | |
| PARA | ------ | 1-33 | DDD | |
| EU | ------ | 1-13 | DDD | |
| PID | ------ | 1-80 | DDD | |
| SET | ------ | 1-99 | DDD | |
| TBL | ------ | 1-22 | DDD | |
| CNST | ------ | 1-26 | DDD | |
| FO_R | 1-19 | ------ | DDD | |
| FO_W | 1-19 | ------ | DDD | |
| FC | 1-19 | ------ | DDD | |
| FD | 1-19 | ------ | DDD | |
| FBR1_R | ------ | 1.0-30.22 | DDD.DD | |
| FBR2_R | ------ | 1.0-30.22 | DDD.DD | |
| FBR3_R | ------ | 1.0-30.22 | DDD.DD | |
| FBR4_R | ------ | 1.0-30.22 | DDD.DD | |
| FBR5_R | ------ | 1.0-30.22 | DDD.DD | |
| FBR6_R | ------ | 1.0-30.22 | DDD.DD | |
| FBR7_R | ------ | 1.0-30.22 | DDD.DD | |
| FBR8_R | ------ | 1.0-30.22 | DDD.DD | |
| FBR9_R | ------ | 1.0-30.22 | DDD.DD | |
| FBR10_R | ------ | 1.0-30.22 | DDD.DD | |
| FBR11_R | ------ | 1.0-30.22 | DDD.DD | |
| FBR12_R | ------ | 1.0-30.22 | DDD.DD | |
| FBR13_R | ------ | 1.0-30.22 | DDD.DD | |
| FBR14_R | ------ | 1.0-30.22 | DDD.DD | |
| FBR15_R | ------ | 1.0-30.22 | DDD.DD | |
| FBR16_R | ------ | 1.0-30.22 | DDD.DD | |
| FBR17_R | ------ | 1.0-30.22 | DDD.DD | |
| FBR18_R | ------ | 1.0-30.22 | DDD.DD | |
| FBR19_R | ------ | 1.0-30.22 | DDD.DD | |

Please refer to the communication protocol for details.

**H: HEX**

**Note：**

1、SET　C85 ----- Transmission rate，data type

0：9600，even，stopbit 1；

1：9600，none，stopbit 2；

2：4800，even，stopbit 1；

3：4800，none，stopbit 2.

2、SET C84 -----setting station No. **The value of C84 must be the same as the PLC's station No.**

When connecting multiple instruments, for distinguishing instruments, each instrument must be set C84 value with a different parameter. .

3、Must press “FUNC+PARA” to set the parameter；

4、PROG. have **19 numbers and** SEG have **30 numbers**, press DOWN key (sub) and PROG key (add) to change program number；

5、Press “FUNC+PROG” to change the program.----every program must be set firstly and then communicate will be ok, or else “PLC Response Error” will print;

6、After “RUN/HLD” light on, many parameters can’t be modified(e.g. SET) In order to reset, press “ PROG+RUN/HOLD” .

Modify the parameter at the state of “DISP”, not at the state of “INPUT”；

7、On the temperature controller, time parameters show number with sexagesimal.

（Example it shows 2222 on the screen, but on the controller panel shows 37.02-----37.00*60+2=2222）

8、PROG’s address setting：

FBR1_R indicates prog 1. (e.g. PROG 1) format: DDD.DD. Main address DDD indicates seg No, subaddress DD indicates parameter value, the correspondence as follows

（Example：FBR1_R address 11.10 indicates PROG 1,SEG 1,T1 2nd ）

**Sub addr DD correspond to temperature controller：**

| Sub Addr | Parameter | Sub Addr | Parameter |
|---|---|---|---|
| .0 | SP | .12 | T2 2nd |
| .1 | TM | .13 | T3 1st |
| .2 | None（Skip） | .14 | T3 2nd |
| .3 | EV1 | .15 | T4 1st |
| .4 | Blank | .16 | T4 2nd |
| .5 | EV2 | .17 | T5 1st |
| .6 | Blank | .18 | T5 2nd |
| .7 | EV3 | .19 | PID |
| .8 | Blank | .20 | None（Skip） |
| .9 | T1 1st | .21 | 9.5. |
| .10 | T1 2nd | .22 | 9.5.to |
| .11 | T2 1st | | |

**SDC36（Please refer to the manual of yamatake SDC36 for details）**

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Data Register | ———— | 4X 0-65535 | DDDDD | |

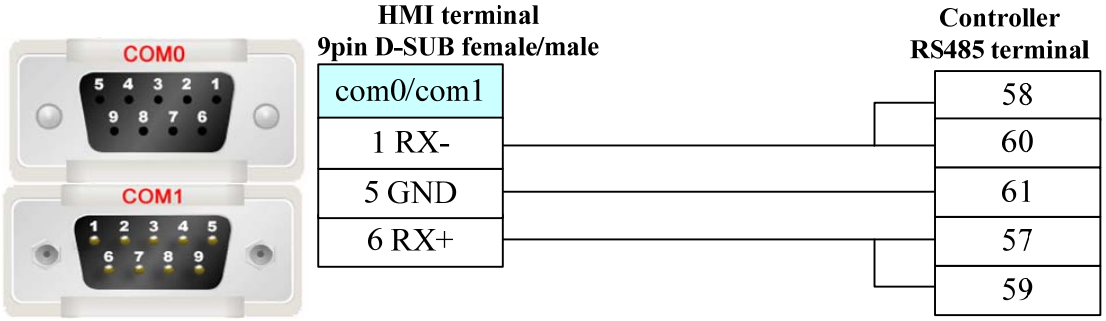
**DMC（Please refer to the manual of DMC-SPL for details, in 10-8 communication parameters）**

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Data Register | ———— | 4X 1002-65535 | DDDDD | Address add 1 to the list of communication parameters |

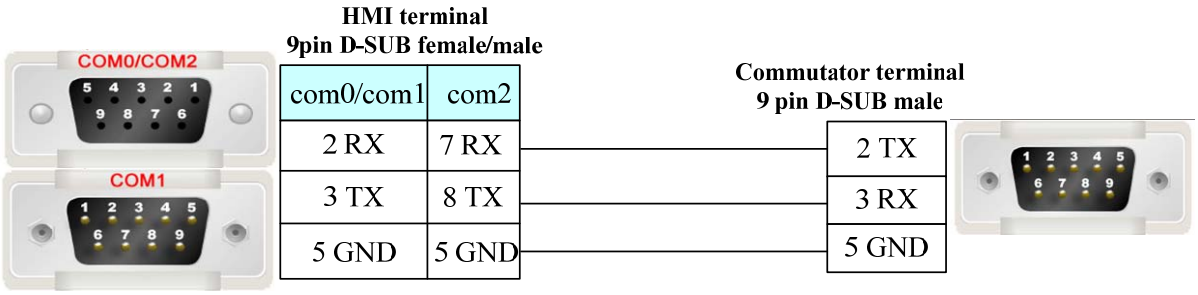
**Example:** ch1 pv is according to 4x1005 in the Kinco HMIware.

## Cable Diagram

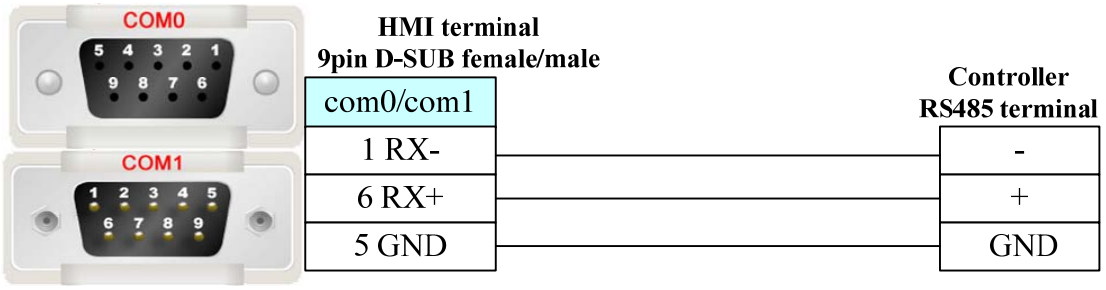
## DC30 RS485 communication cable



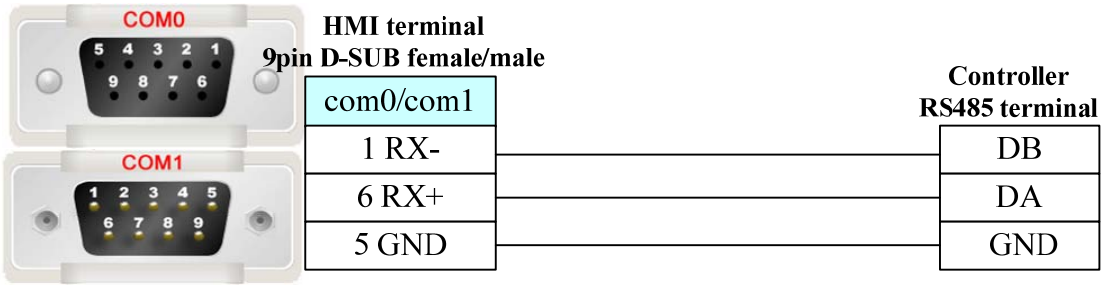

RS232 communication， need to use ***RS-232 to RS-422/485*** converter




## SDC36 RS485 communication




## DMC RS485 communication




# 6.75 Yaskawa Electric Corporation

## Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| V（Inverter） | | RS485 on the CPU unit | Yaskawa AH Modbus RTU |
| MP（Motion Controller） | MP2200<br>MP2300<br>MP2310<br>MP2300S | RS232 on the CPU unit | Yaskawa MP2300 |
| ∑Ⅱ/∑Ⅱ Plus（Servo Controller） | SGDM | RS232 on the CPU unit | Yaskawa SGDM |
| | | RS422 on the CPU unit | |

## **Network communication** (support indirect online and direct online)

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| MP series | MP2400 | ETH on the CPU unit | Yaskawa UDP |

## Serial System configuration

| Series | CPU | Link Module | COM Type | Parameter | Cable |
|---|---|---|---|---|---|
| V | | RS485 on the CPU unit | RS485-2 | Setting | Your owner cable |
| MP | MP2300 | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| ∑Ⅱ/∑Ⅱ Plus | SGDM | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | | RS422 on the CPU unit | RS485-4 | Setting | Your owner cable |

## Network System configuration

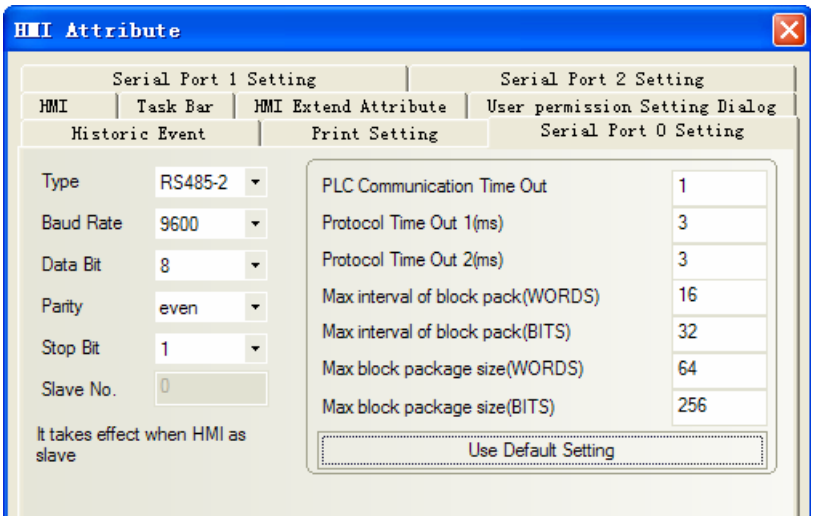
| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| MP series | MP2400 | ETH on the CPU unit | ETH | Setting | Your owner cable |

## Serial Communication Setting

### HMI

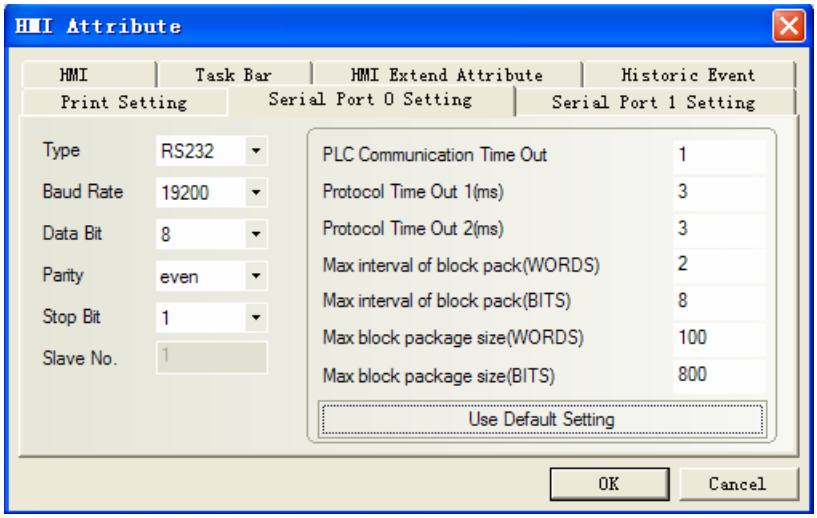
#### Inverter

**RS485 Default communication:** 9600, 8, even, 1; station: 1




## MP2300

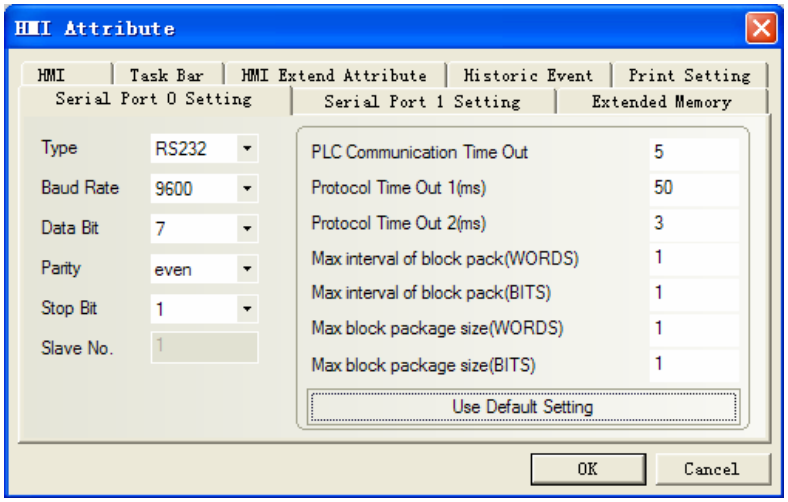
**RS232 default communication:** 19200, 8, even, 1; station: 1



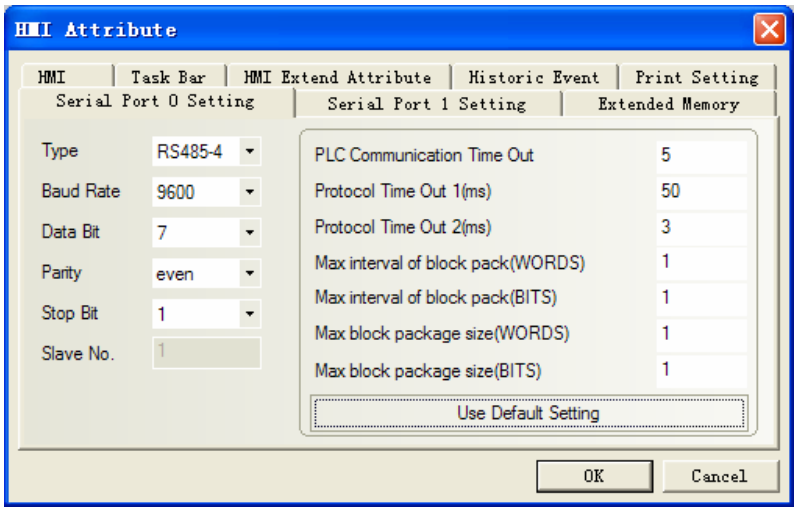

## SGDM

**Default communication:** 9600, 7, even, 1; station: 0

**RS232 communication**



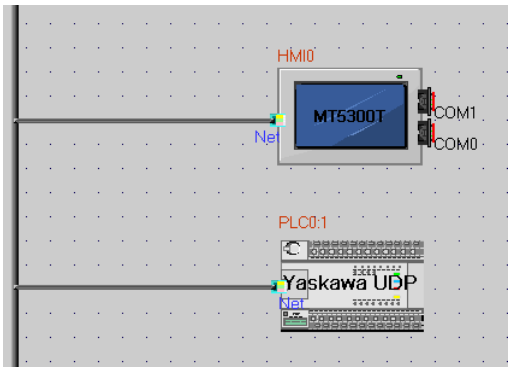

### RS422 communication



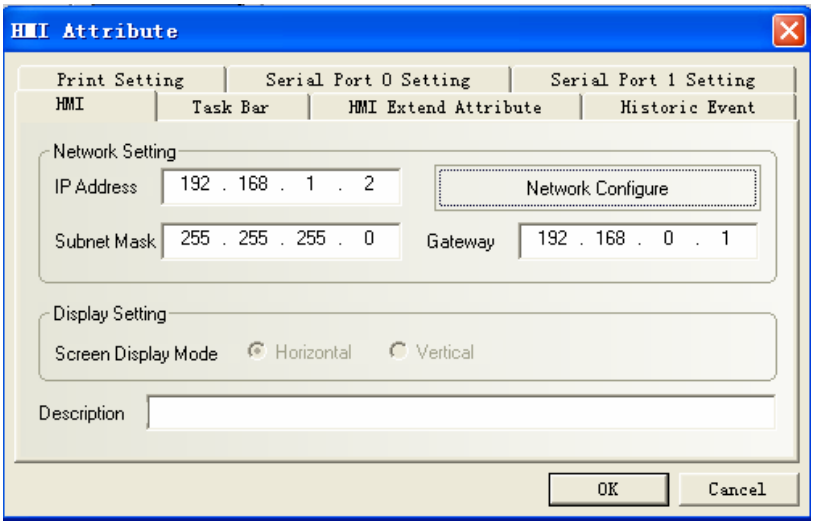

## Network Communication Setting

### Network communication

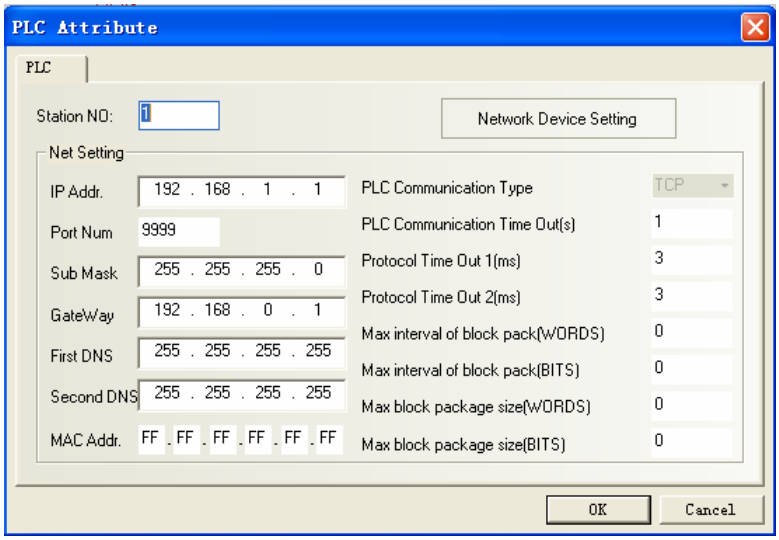
#### ※Project construction



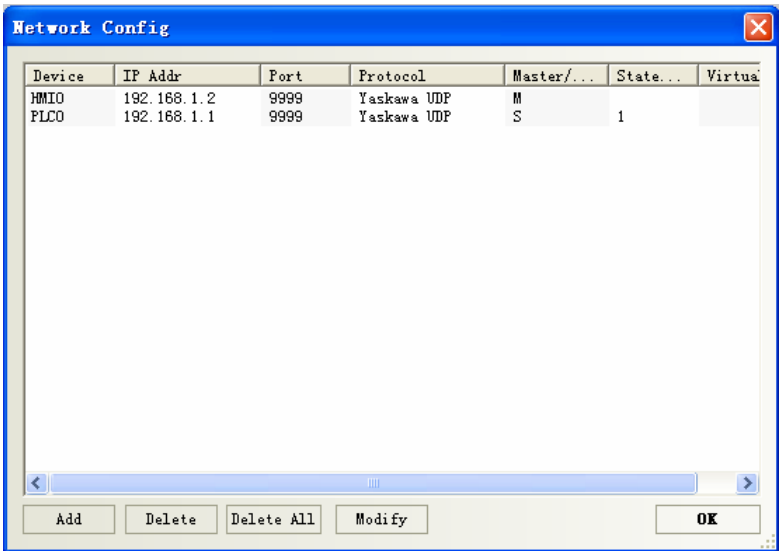

#### ※HMI Attribute




**※PLC Attribute (station is not necessary)**

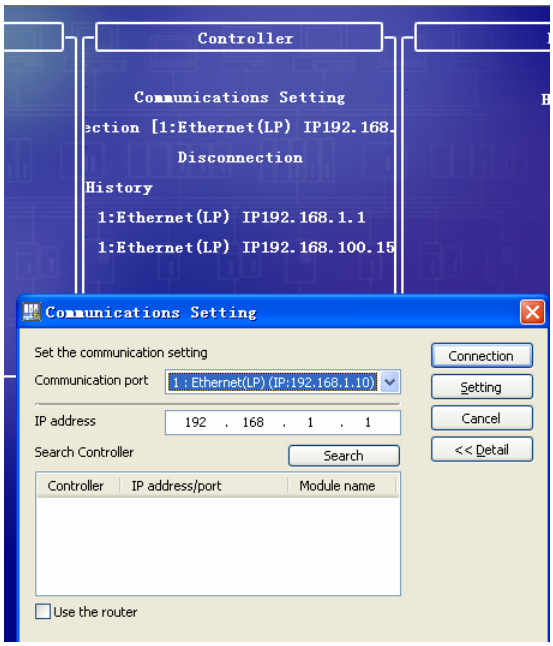



**※Network configuration（Note：IP and port must be set correct, that is set as MPE720 software.）**

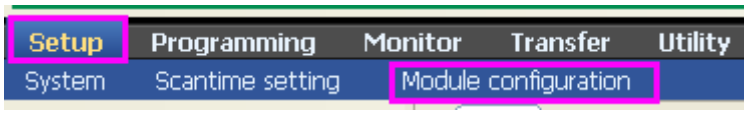


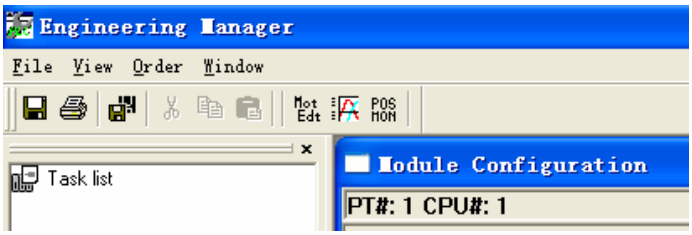

## PLC software setting

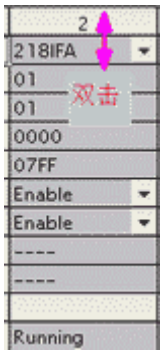
**1.** set the IP，connect with the MPE720 software

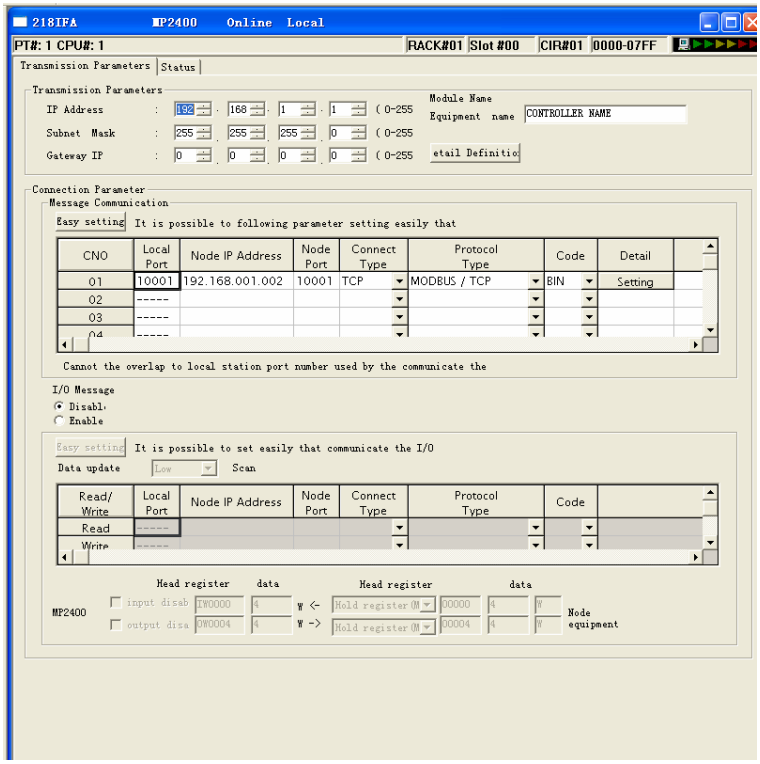



2. how to set the IP

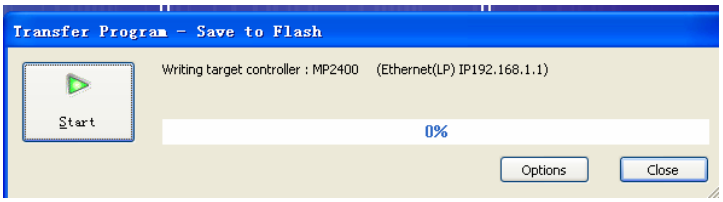




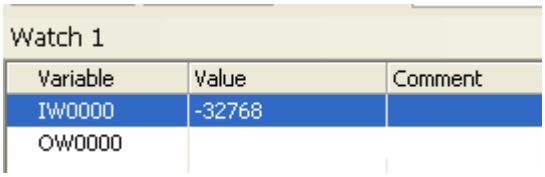

Change, save, and save to flash：



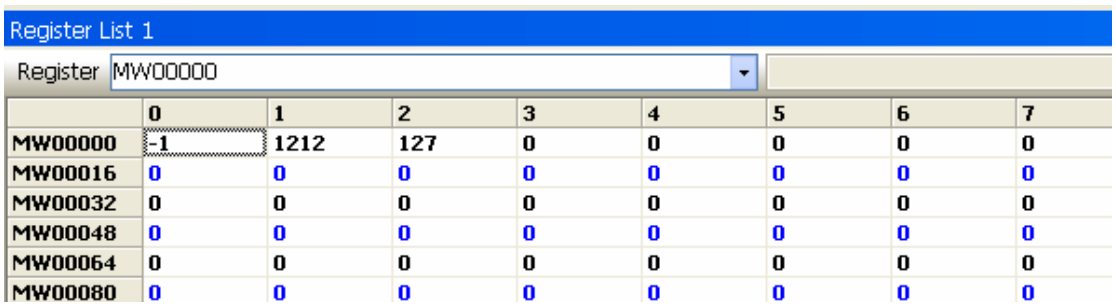

Restart the controller and the set is ok.

If online, then you can monitoring the data：

Monitor single data：




Monitor the Register：



## Supported Device

**V inverter**

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Internal/external output node | 0X1-65535 | ------ | DDDDD | |
| Internal/external input node | 1X1-65535 | ------ | DDDDD | |
| Simulant input data register | ------ | 3X1-65535 | DDDDD | |
| data register | ------ | 4X1-65535 | DDDDD | |

Node: this drive can not provide write batch of word part

**MP2300**

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Coil | MB0.0-4095.F | ------ | DDDD.H | |
| Input Relay | IB 0.0-FFF.F | ------ | HHHH.H | |
| Hold Register | ------ | MW 0-65534 | DDDDD | |
| Input Register | ------ | IW 0-7FFF | HHHH | |

**Note：** IB0.0-0.F are occupied by the system; IW0 is occupied by the system.

**SGDM**

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Function Selection Basic Switches | ------ | Pn000 ～ Pn003 | HHH | |
| Speed Loop Gain and so on | ------ | Pn100 ～ Pn118 | HHH | |
| Position Control Reference | ------ | Pn200 ～ Pn205 | HHH | |
| Speed Control Reference | ------ | Pn300 ～ Pn308 | HHH | |
| Torque Control Reference | ------ | Pn400 ～ Pn407 | HHH | |
| Sequence Reference | ------ | Pn500 ～ Pn510 | HHH | |
| Other | ------ | Pn600 ～ Pn601 | HHH | |
| Monitor mode | ------ | Un000 ～ Un00D | HHH | |

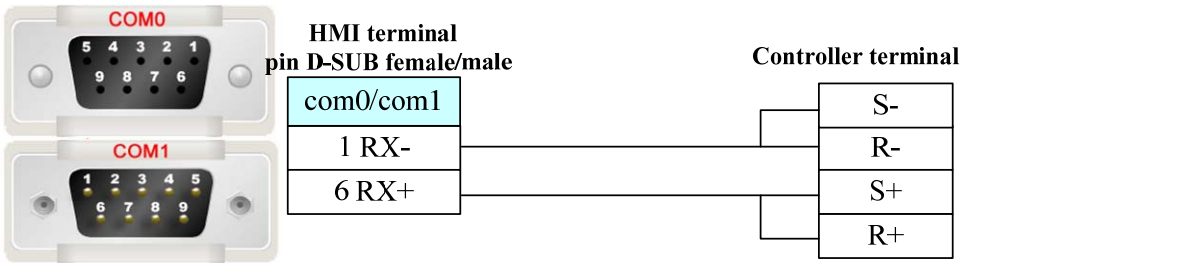
**UDP**

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Input register node | IB0000.0-FFFF.F | ------ | HHHHH.H | |
| Output register node | OB0000.0-FFFF.F | ------ | HHHHH.H | |
| holding register node | MB00000.0-65534.F | ------ | DDDDD.H | |
| Input register | ------ | IW0000-FFFF | HHHH | |
| Output register | ------ | OW0000-FFFF | HHHH | |
| Holding register | ------ | MW00000-65534 | DDDDD | |

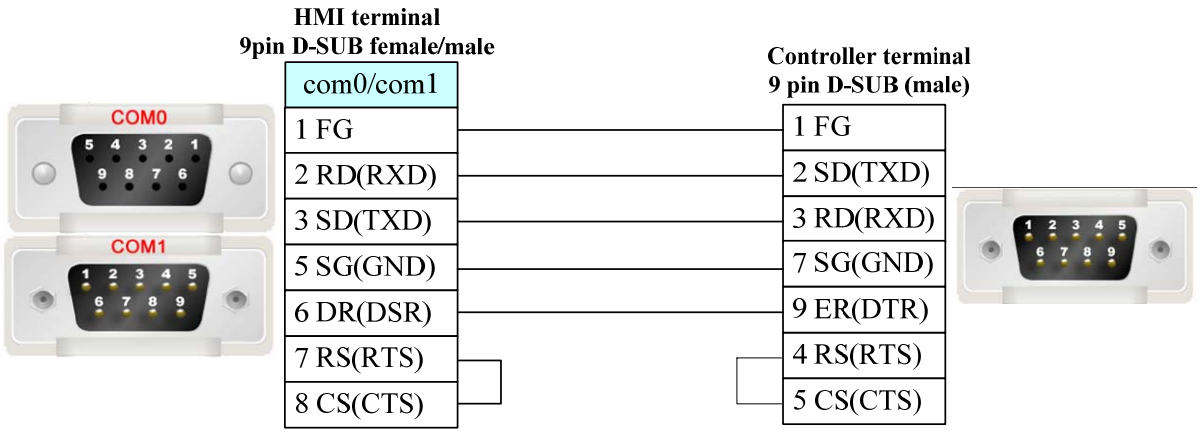
Note：In the Kinco HMIware software, bit address format is HHHH.H, but there is no point in the controller. E.g.: In the Kinco HMIware software, the bit address is MB65534.F, but there is no point in the controller, and it is MB65534F. We set the I\O address as large as enough, and we found the big address can't be written, but it is the same effect with the monitoring.

# Cable Diagram

## V series inverter

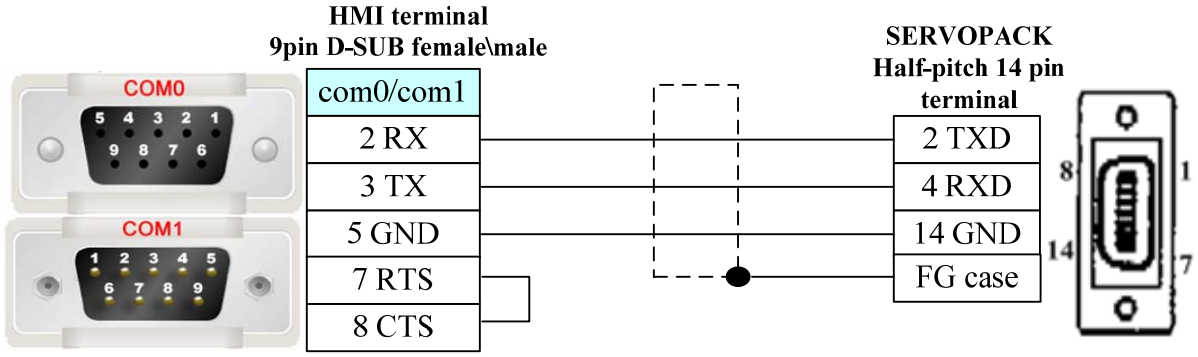



## MP2300 RS232

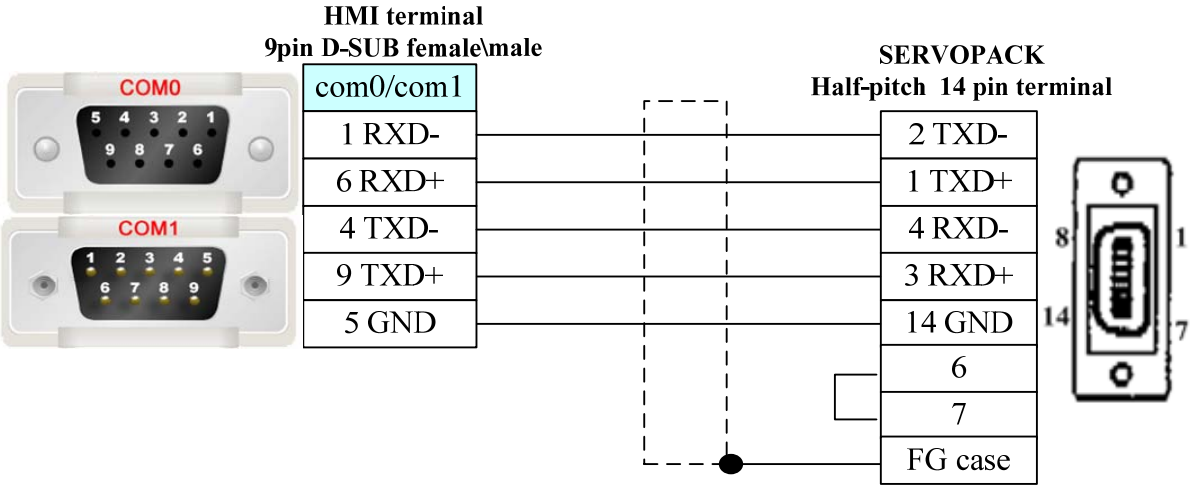



## SGDM

### RS232 communication cable



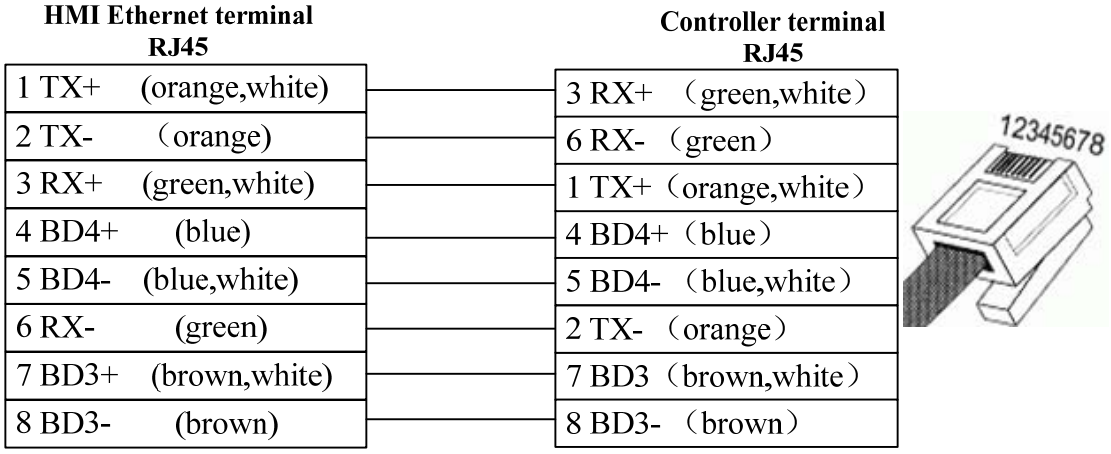

### RS422 communication cable



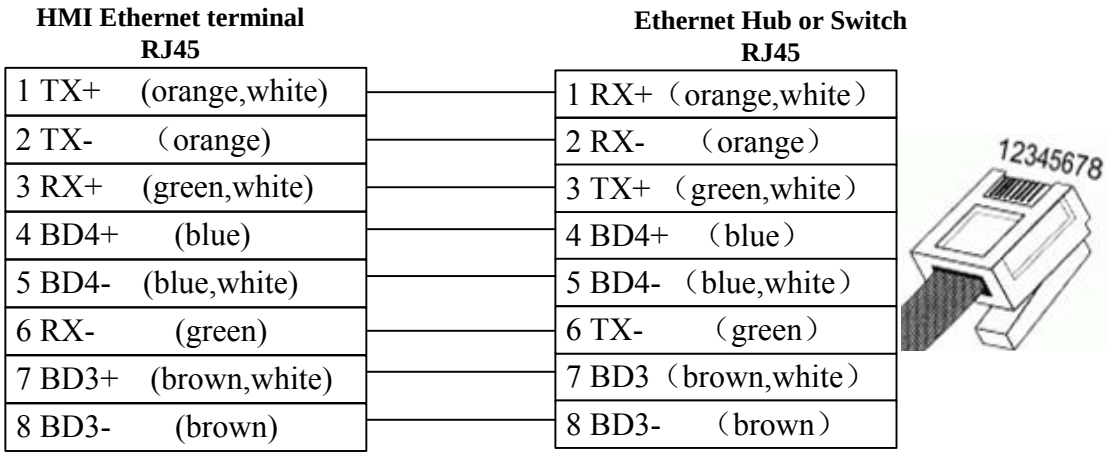

## Ethernet communication protocol cable

Cross-connection or crossover network cable can be used as communication cable via the hub or switch

### a. Cross-connection cable diagram




### b. crossover network cable diagram



## 6.76 Yokogawa Electric Corporation

### Serial Communication

| Series | CPU | Link Module | Driver |
|---|---|---|---|
| FA-M3 | F3SP21-0N<br>F3SP25-2N<br>F3SP28-3N<br>F3SP35-5N<br>F3SP38-6N<br>F3SP53-4H<br>F3SP58-6H<br>F3SP28-3S<br>F3SP38-6S<br>F3SP53-4S<br>F3SP58-6S<br>F3SP59-7S | CPU Direct | Yokogawa FA-M3 |
| | F3SP20-0N<br>F3SP21-0N<br>F3SP25-2N<br>F3SP28-3N<br>F3SP30-0N<br>F3SP35-5N<br>F3SP38-6N<br>F3SP53-4H<br>F3SP58-6H | F3LC11-1N<br>F3LC11-1F<br>F3LC11-2F<br>F3LC12-1F | |
| | F3SP36-3N<br>F3SP28-3S<br>F3SP38-6S<br>F3SP53-4S<br>F3SP58-6S<br>F3SP59-7S<br>F3SP66-4S<br>F3SP67-6S | F3LC11-2N | |

### Network Communication （direct online simulation disable）

| Series | CPU | Link Module | Driver |
|---|---|---|---|

| | | | |
|---|---|---|---|
| FA-M3 | F3SP21-0N<br>F3SP25-2N<br>F3SP28-3N<br>F3SP35-5N<br>F3SP38-6N<br>F3SP53-4H<br>F3LE01-5T<br>F3LE11-0T<br>F3SP58-6H<br>F3SP28-3S<br>F3SP38-6S<br>F3SP53-4S<br>F3SP58-6S<br>F3SP59-7S | F3LE01-5T<br>F3LE11-0T | Yokogawa FA-M3 Ethernet |
| | F3SP66-4S<br>F3SP67-6S | Ethernet I/F on CPU Unit | |

## Serial System configuration

| Series | CPU | Link Module | COM Type | Parameter | Cable |
|---|---|---|---|---|---|
| FA-M3 | F3SP21-0N<br>F3SP25-2N<br>F3SP28-3N<br>F3SP35-5N<br>F3SP38-6N<br>F3SP53-4H<br>F3SP58-6H<br>F3SP28-3S<br>F3SP38-6S<br>F3SP53-4S<br>F3SP58-6S<br>F3SP59-7S | RS232 on the CPU unit | RS232 | Setting | Your owner cable |
| | F3SP20-0N<br>F3SP21-0N<br>F3SP25-2N<br>F3SP28-3N<br>F3SP30-0N<br>F3SP35-5N | RS422/485(4Wire) port on F3LCLL-2F | RS422 | Setting | Your owner cable |

| | | | | | |
|---|---|---|---|---|---|
| | F3SP38-6N<br>F3SP53-4H<br>F3SP58-6H<br>F3SP36-3N<br>F3SP28-3S<br>F3SP38-6S<br>F3SP53-4S<br>F3SP58-6S<br>F3SP59-7S<br>F3SP66-4S<br>F3SP67-6S | RS422/485(2Wire) port on F3LCLL-2F | RS485 | Setting | Your owner cable |

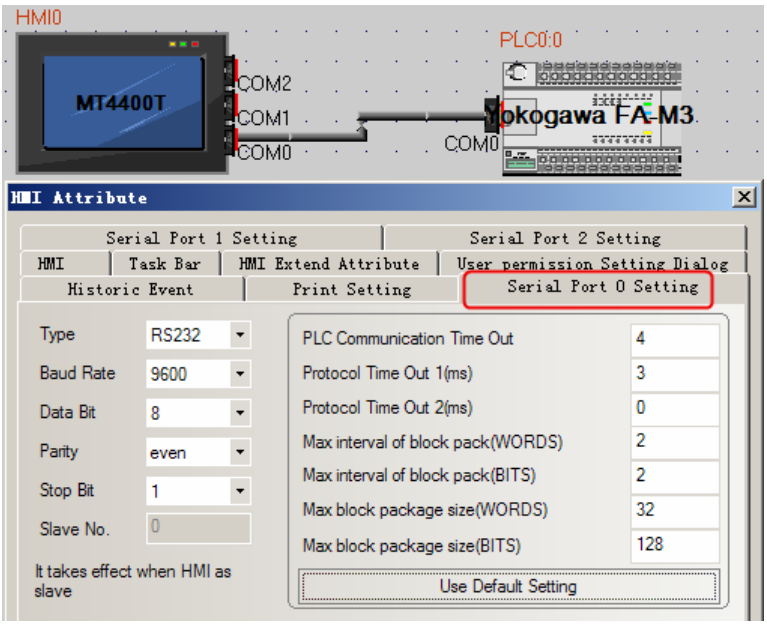
## Network System configuration

| Series | CPU | Link Module | Connect Type | Parameter | Cable |
|---|---|---|---|---|---|
| FA-M3 | F3SP21-0N<br>F3SP25-2N<br>F3SP28-3N<br>F3SP35-5N<br>F3SP38-6N<br>F3SP53-4H<br>F3LE01-5T<br>F3LE11-0T<br>F3SP58-6H<br>F3SP28-3S<br>F3SP38-6S<br>F3SP53-4S<br>F3SP58-6S<br>F3SP59-7S | F3LE01-5T<br>F3LE11-0T | Ethernet | Setting | Your owner cable |
| | F3SP66-4S<br>F3SP67-6S | Ethernet I/F on CPU Unit | | | |

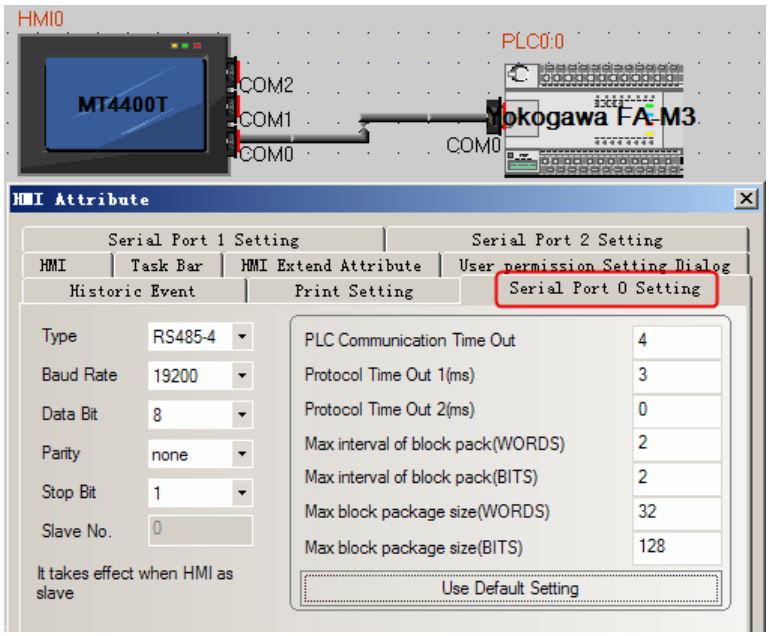
## Serial Communication Setting

### HMI

RS23 default communication: 9600, 8, 1, even; station: 0 (station number disable)




RS485-4 default communication: 19200, 8, 1, none; station: 1




## PLC setting

Set the 485 communication module on the right as below.

1. Transmission Speed Setting Switch: SW1=7
2. Data Code Setting Switch: SW2

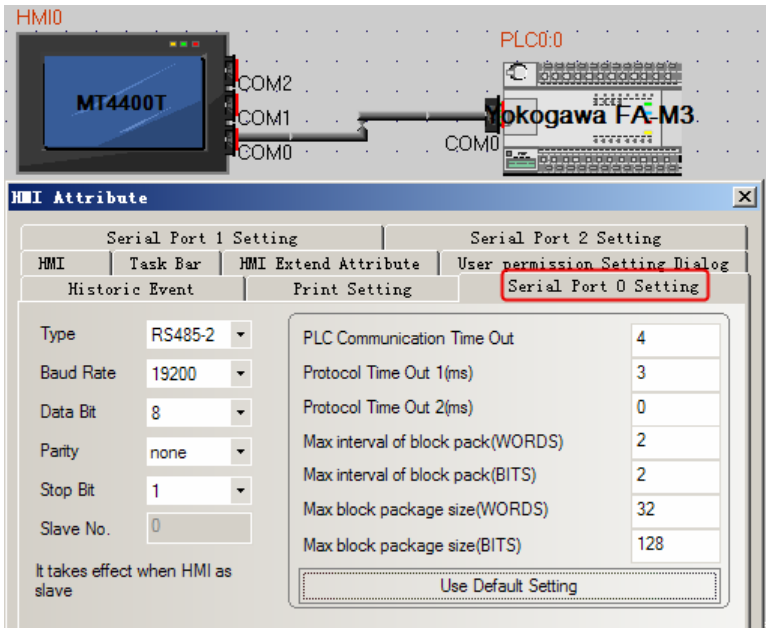
| Bit | Settings | Setup Description |
|---|---|---|
| 1 | ON | Data Length |
| 2 | OFF | Parity Bit |
| 3 | OFF | -- |
| 4 | OFF | Stop Bit |
| 5 | OFF | Exist Sum Check |
| 6 | ON | Exist Terminator |

| | | |
|---|---|---|
| 7 | OFF | Protect |
| 8 | OFF | Always OFF |

3. Station No. setting 1

4. Set the termination resistance switch of only the module which terminates the connection to 4-WIRE

RS485-2 default communication: 19200, 8, 1, none; station: 1




PLC setting

Set the 485 communication module on the right as below.

1. Transmission Speed Setting Switch: SW1=7

2. Data Code Setting Switch: SW2

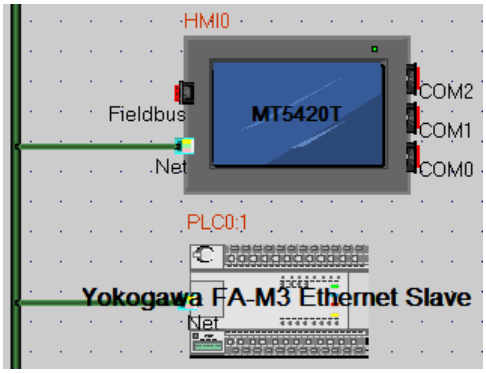
| Bit | Settings | Setup Description |
|---|---|---|
| 1 | ON | Data Length |
| 2 | OFF | Parity Bit |
| 3 | OFF | -- |
| 4 | OFF | Stop Bit |
| 5 | OFF | Exist Sum Check |
| 6 | ON | Exist Terminator |
| 7 | OFF | Protect |
| 8 | OFF | Always OFF |

3. Station No. setting 1

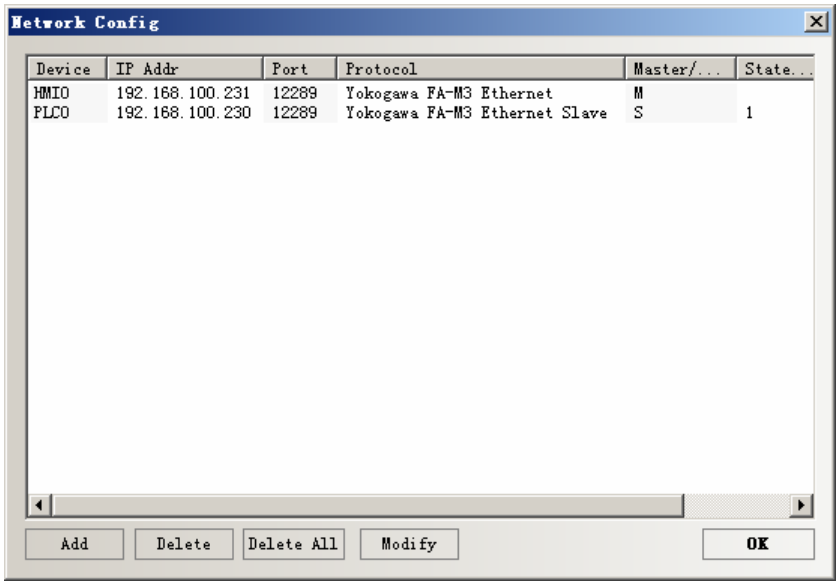
4. Set the termination resistance switch of only the module which terminates the connection to 2-WIRE.

## Network Communication Setting

HMI



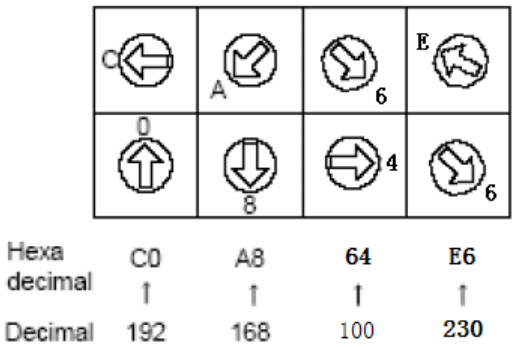

## Network configuration




## PLC setting

Use the swicthes on the right side of Ethernet module for setting the External Device.

1. Set all condition setup switch off.
2. Set IP Address: 192.168.100.230.




# Supported Device

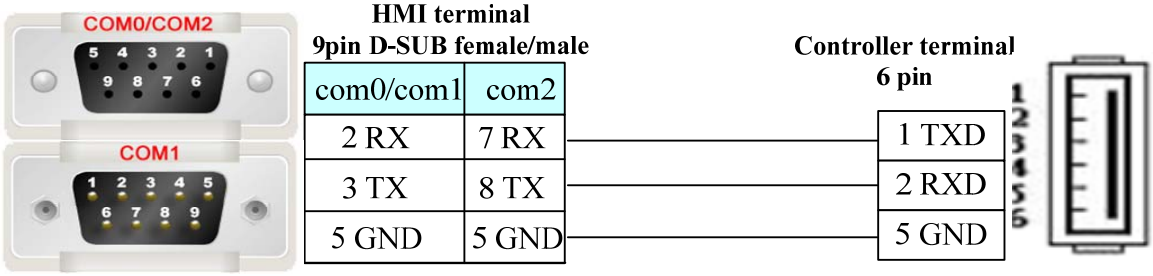
| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| Link Relay | L 1~256 | ------ | DDD | |
| Special Relay | M 1~256 | ------ | DDD | |
| Internal Relay | I 1~256 | ------ | DDDD | |

| | | | | |
|---|---|---|---|---|
| Output Relay | Y (233~264)&(333~364） | ------ | DDD | |
| Input Relay | X (201~232)&( 301~332） | ------ | DDD | Read only |
| Special Register | ------ | Z_word 1~256 | DDDD | |
| Link Register | ------ | W_word 1~256 | DDD | |
| Index Register | ------ | V_word 1~64 | DD | |
| File Register | ------ | B_word 1~256 | DD | |
| Data Register | ------ | D_word 1~256 | DDD | |

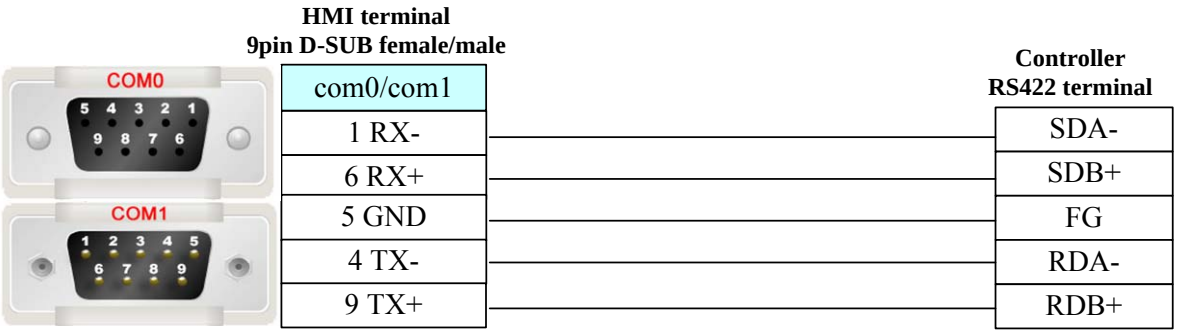
# Cable Diagram

## RS232

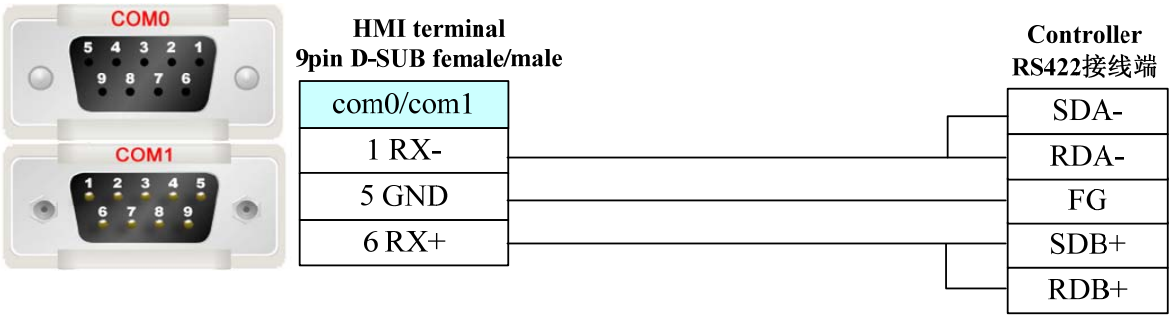
Yokogawa programming cable




## RS485-4




## RS485-2




## Ethernet communication protocol cable

Cross-connection or crossover network cable can be used as communication cable via the hub or switch

a. Cross-connection cable diagram

| HMI Ethernet terminal RJ45 | | Controller terminal RJ45 |
|---|---|---|
| 1 TX+ | (orange,white) | 3 RX+ （green,white） |
| 2 TX- | （orange) | 6 RX- （green） |
| 3 RX+ | (green,white) | 1 TX+（orange,white） |
| 4 BD4+ | (blue) | 4 BD4+（blue） |
| 5 BD4- | (blue,white) | 5 BD4- （blue,white） |
| 6 RX- | (green) | 2 TX- （orange） |
| 7 BD3+ | (brown,white) | 7 BD3（brown,white） |
| 8 BD3- | (brown) | 8 BD3- （brown） |

b. crossover network cable diagram

| HMI Ethernet terminal RJ45 | | Ethernet Hub or Switch RJ45 |
|---|---|---|
| 1 TX+ | (orange,white) | 1 RX+（orange,white） |
| 2 TX- | （orange) | 2 RX- （orange） |
| 3 RX+ | (green,white) | 3 TX+ （green,white） |
| 4 BD4+ | (blue) | 4 BD4+ （blue） |
| 5 BD4- | (blue,white) | 5 BD4- （blue,white） |
| 6 RX- | (green) | 6 TX- （green） |
| 7 BD3+ | (brown,white) | 7 BD3（brown,white） |
| 8 BD3- | (brown) | 8 BD3- （brown） |

## 6.77 YuDian AI

### Serial Communication

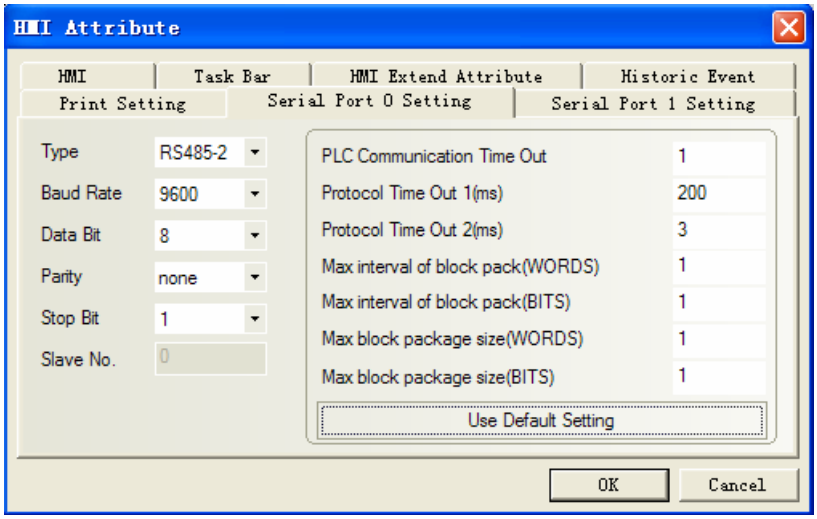
| Series | CPU | Link Module | Driver |
|---|---|---|---|
| AI | AI-518<br>AI-701 | RS485 on the CPU unit | YuDian AI Single_Loop |
| | AI-7048 | RS485 on the CPU unit | YuDian AI 4_Loop |

### System configuration

| Series | CPU | Link Module | COMM Type | Parameter | Cable |
|---|---|---|---|---|---|
| AI | AI-518<br>AI-701 | RS485 on the CPU unit | RS485 | Setting | Your owner cable |
| | AI-7048 | RS485 on the CPU unit | RS485 | Setting | Your owner cable |

## Communication Setting

**RS485 default communication:** 9600, 8, none, 1; station: 1




**SPECIAL NOTE:**

For example: If station number is 2, register PV0.0 denotes channel 2, and PV1.0 denotes channel 3 (station number 2+main address 1).

Thereinto the setting of station number is very important, it denotes start address of the controller (viz. instrument address in instrument parameter), and main address just denotes 4 channels. When main address is 0, it denotes channel (station number+0)

## Supported Device

**AI-518**

| Device | Bit Address | Word Address | | | Format |
|---|---|---|---|---|---|
| **SV/STEP** | ------ | **0** | **00H** | | DD |
| **HIAL** | ------ | **1** | **01H** | -1999~+9999 | DD |
| **LoAL** | ------ | **2** | **02H** | -1999~+9999 | DD |
| **dHAL** | ------ | **3** | **03H** | 0~9999 | DD |
| **dLAL** | ------ | **4** | **04H** | 0~9999 | DD |
| **dF** | ------ | **5** | **05H** | 0~2000 | DD |
| **CtrL** | ------ | **6** | **06H** | 0~4 | DD |
| **M5** | ------ | **7** | **07H** | 0~9999 | DD |
| **P** | ------ | **8** | **08H** | 1~9999 | DD |
| **t** | ------ | **9** | **09H** | 0~2000 | DD |
| **CtI** | ------ | **10** | **0AH** | 0~125 | DD |
| **Sn（Read Only）** | ------ | **11** | **0BH** | 0~37 | DD |
| **dIP（Read Only）** | ------ | **12** | **0CH** | 0~3 | DD |
| **dIL** | ------ | **13** | **0DH** | -1999~+9999 | DD |

| | | | | | |
|---|---|---|---|---|---|
| **dIH** | ------ | **14** | **0EH** | -1999~+9999 | DD |
| **ALP** | ------ | **15** | **0FH** | 0~9999 | DD |
| **Sc** | ------ | **16** | **10H** | -1999~+4000<br>0.1℃ | DD |
| **Op1** | ------ | **17** | **11H** | 0~48 | DD |
| **oPL** | ------ | **18** | **12H** | -110~+110% | DD |
| **oPH** | ------ | **19** | **13H** | 0~110% | DD |
| **CF（Read Only）** | ------ | **20** | **14H** | 0~127 | DD |
| **Baudrate(bAud)/808P running status control word:<br>run:0 pause:4 stop:12(read only)** | ------ | **21** | **15H** | 0~19.2K | DD |
| **ADDR** | ------ | **22** | **16H** | 0~100 | DD |
| **dL** | ------ | **23** | **17H** | 0~20 | DD |
| **run** | ------ | **24** | **18H** | 0~127 | DD |
| **Loc** | ------ | **25** | **19H** | 0~9999 | DD |

## AI-701

| Device | Bit Address | Word Address | | | Format |
|---|---|---|---|---|---|
| **HIAL** | ------ | **1** | **01H** | -9990~+30000 | DD |
| **LoAL** | ------ | **2** | **02H** | -9990~+30000 | DD |
| **HdAL** | ------ | **3** | **03H** | -9990~+30000 | DD |
| **LdAL** | ------ | **4** | **04H** | -9990~+30000 | DD |
| **AHYS** | ------ | **5** | **05H** | 0~2000 | DD |
| **InP（Read Only）** | ------ | **11** | **0BH** | 0~37 | DD |
| **dPt** | ------ | **12** | **0CH** | 0~3 | DD |
| **SCL** | ------ | **13** | **0DH** | -9999~+30000 | DD |
| **SCH** | ------ | **14** | **0EH** | -9999~+30000 | DD |
| **AOP** | ------ | **15** | **0FH** | 0~4444 | DD |
| **Scb** | ------ | **16** | **10H** | -1999~+4000<br>0.1℃ | DD |
| **Opt** | ------ | **17** | **11H** | 0~48 | DD |
| **Baudrate(bAud)/808P running status control word:<br>run:0 pause:4 stop:12(read only)** | ------ | **21** | **15H** | 0~19.2K | DD |
| **ADDR** | ------ | **22** | **16H** | 0~80 | DD |
| **FILt** | ------ | **23** | **17H** | 0~40 | DD |
| **Loc** | ------ | **25** | **19H** | 0~255 | DD |

**Note：** 1、When setting the parameter of ADDR, it match the PLC Station Number .

2、If connecting many devices, you should set different ADDR values.

## AI-7048

| Device | Bit Address | Word Address | Format | Notes |
|---|---|---|---|---|
| PV | ------ | 0.0-3.0 | D.D | Read only |
| SV | ------ | 0.0-3.0 | D.D | |
| Reference | ------ | 0.0-3.86 | D.D | |

**Reference**

| Device | Bit Address | Word Address | | | Format |
|---|---|---|---|---|---|
| **SP** | ------ | **0** | **00H** | -1999-30000 | DDD.DDD |
| **HIAL** | ------ | **1** | **01H** | -1999~+9999 | DDD.DDD |
| **LoAL** | ------ | **2** | **02H** | -1999~+9999 | DDD.DDD |
| | ------ | **3** | **03H** | | DDD.DDD |
| | ------ | **4** | **04H** | | DDD.DDD |
| **AHYS** | ------ | **5** | **05H** | 0~2000 | DDD.DDD |
| **AT** | ------ | **6** | **06H** | 0~4 | DDD.DDD |
| **P** | ------ | **7** | **07H** | 0~9999 | DDD.DDD |
| **I** | ------ | **8** | **08H** | 0~9999 | DDD.DDD |
| **d** | ------ | **9** | **09H** | 0~2000 | DDD.DDD |
| | ------ | **10** | **0AH** | | DDD.DDD |
| **InP** | ------ | **11** | **0BH** | 0~42 | DDD.DDD |
| **dPt** | ------ | **12** | **0CH** | 0~3 | DDD.DDD |
| **SCL** | ------ | **13** | **0DH** | 0~+9999 | DDD.DDD |
| **SCH** | ------ | **14** | **0EH** | 0~+9999 | DDD.DDD |
| **AOP** | ------ | **15** | **0FH** | 0~31 | DDD.DDD |
| **Scb** | ------ | **16** | **10H** | -1999~+2000 0.1℃ | DDD.DDD |
| | ------ | **17** | **11H** | | DDD.DDD |
| | ------ | **18** | **12H** | | DDD.DDD |
| **OPH** | ------ | **19** | **13H** | 0~220 | DDD.DDD |
| **AF** | ------ | **20** | **14H** | 0~15 | DDD.DDD |
| **Meter condition code** | ------ | **21** | **15H** | 0~19.2K | DDD.DDD |
| **ADDR** | ------ | **22** | **16H** | 0~64 | DDD.DDD |
| **FILt** | ------ | **23** | **17H** | 0~20 | DDD.DDD |
| **Nonc** | ------ | **24** | **18H** | 0~7 | DDD.DDD |
| **Loc** | ------ | **25** | **19H** | 0~9999 | DDD.DDD |
| **Cn** | ------ | **26** | **1AH** | 0-4 | DDD.DDD |

**NOTE:**

**1、** When setting the parameter of ADDR, it match the PLC Station Number.

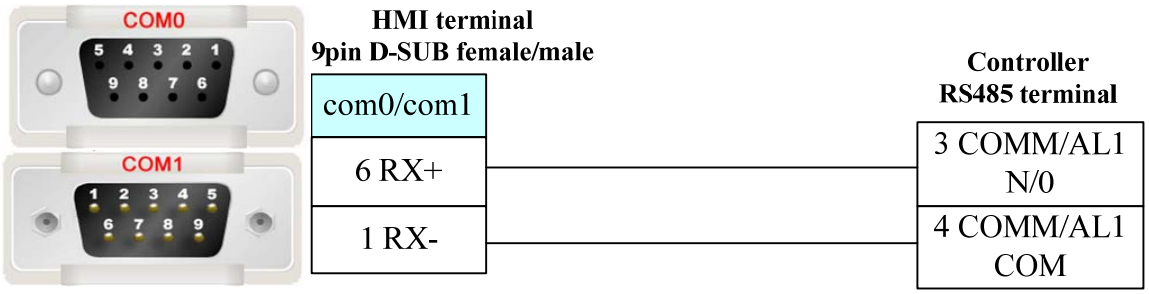
**2、** If connecting many devices, you should set different ADDR values.

**3、** AI-7048 has 4 loops, so it occupies 4 address, For instance, Addr=5,address 5~8 were used by this

controller, other controller can't use address 5~8.

## Cable Diagram

### RS485 communication cable




RS232 communication，need to use ***RS-232 to RS-422/485*** converter